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February 9, 2011

File No. 039610-0003

VIA FEDEX

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-9
1516 Ninth Street, MS-4
Sacramento, California 95814-5512

Re: City of Palmdale Hybrid Power Plant Project: Docket No. 08-AFC-9

Dear Sir/Madam:

Pursuant to California Code of Regulations, title 20, Sections 1209, 1209.5, and 1210, enclosed herewith for filing please find Applicant's Prehearing Conference Statement.

Please note that the enclosed submittal was filed today via electronic mail to your attention and to all parties on the attached proof of service list.

Very truly yours,

Paul E. Kihm
Senior Paralegal

Enclosure

cc: 08-AFC-9 Proof of Service List (w/encl., via e-mail and U.S. Mail)
Michael J. Carroll, Esq. (w/encl.)
Marc T. Campopiano, Esq. (w/encl.)

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STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

IN THE MATTER OF:	)	DOCKET NO. 08-AFC-9
	)	
APPLICATION FOR CERTIFICATION, FOR THE PALMDALE HYBRID POWER PROJECT BY THE CITY OF PALMDALE	)	APPLICANT'S PREHEARING CONFERENCE STATEMENT

On behalf of the City of Palmdale ("Applicant") for the Palmdale Hybrid Power Plant Project (08-AFC-9) ("PHPP"), we hereby submit the Applicant's Prehearing Conference Statement in accordance with the Second Revised Notice of Prehearing Conference And Evidentiary Hearing And Order, dated January 31, 2011.

As a preliminary matter, Applicant concurs with California Energy Commission ("CEC") Staff's proposal, as set forth in its Prehearing Conference Statement filed on February 4, 2011, that the Commission approve both the Applicant's proposed transmission line route and Alternative Route 4 proposed by the Staff, and allow the Applicant to determine which route to construct. Applicant also concurs with Staff's recommendation that the testimony of both the Applicant and the Staff on this topic area be entered by declaration.

I. INFORMATION REQUESTED BY SECOND REVISED NOTICE

The following topic area headers address the specific informational topics required by the Second Revised Notice.

A. The Topic Areas That Are Complete And Ready To Proceed To Evidentiary Hearing

All topic areas are complete and ready to proceed to evidentiary hearing.

B. The Topic Areas That Are Not Complete And Not Yet Ready To Proceed To Evidentiary Hearing, And The Reasons Therefore

All topic areas are complete and ready to proceed to evidentiary hearing.

C. The Topic Areas That Remain Disputed And Require Adjudication, And The Precise Nature Of The Dispute For Each Topic

Applicant concurs with CEC Staff's Prehearing Conference Statement regarding the topic areas and specific items that remain in dispute and will require adjudication if not resolved prior to the evidentiary hearing. Those topic areas include Air Quality, Biological Resources, Hazardous Resources, and Traffic and Transportation. The specific items in dispute are summarized below:

- **AC-SC18** – Related to the offset ratio for NOx and VOC emission reduction credits obtained via transfer from the San Joaquin Valley Air Pollution Control District.
- **BIO-8 and -10** – Related to topsoil salvage requirements.
- **BIO-14** – Related to the raven fee, monitoring, management, and control plan.
- **BIO-17** – Related to Swainson's Hawk habitat compensatory mitigation.
- **HAZ-2** – Related to the preparation of a Process Safety Management Plan and a Spill Prevention and Control Countermeasure Plan.
- **TRANS-1** – Related to construction-traffic access to the project site.

Please see **Appendix A**, Applicant's comments on the FSA, which identifies Applicant's specific dispute with these proposed Conditions of Certification. Applicant believes that at least some of these items will be resolved at the Continued Committee Ordered Workshop to be held on February 14, 2011 immediately preceding the Prehearing Conference.

D. The Identity Of Each Witness Sponsored By Each Party (Note: Witnesses Must Have Professional Expertise In The Discipline Of Their Testimony); The Topic Area(s) Which Each Witness Will Present; A Brief Summary Of The Testimony To Be Offered By Each Witness; Qualifications Of Each Witness; The Time Required To Present Direct Testimony By Each Witness; And Whether The Party Seeks To Have The Witness Testify In Person Or Telephonically

To address remaining issues of dispute with the CEC Staff and to respond to issues that may be raised by interveners, the following expert witnesses are expected to testify at the evidentiary hearing on behalf of the Applicant in the areas of Air Quality, Biological Resources, Hazardous Materials Management and Traffic and Transportation.

Topic Area: Air Quality

Witness: Sara Head

Summary of Testimony: The witness will testify as to the appropriateness of the 1.3:1 offset ratio proposed by Applicant and the Antelope Valley Air Quality Management District for VOC and NOx emission reduction credits transferred from the San Joaquin Valley Air Pollution Control District. The witness may also testify to issues raised in the area of Air Quality by the interveners.

Qualifications: Witness qualifications are contained in Appendix B.

Time Required for Direct Testimony: The time required will depend to some extent on the issues raised by interveners. Applicant estimates that direct testimony will take approximately one hour.

Form of Testimony: In person.

Topic Area: Biology

Witnesses: Matt Amalong, Alice Karl and Sara Head.

Summary of Testimony: The witnesses will testify as to the specific issues that remain in dispute with the CEC Staff as summarized below. The witness may also testify to issues raised in the area of Air Quality by the interveners.

- Regarding proposed Conditions of Certification BIO-8 and BIO-10, Applicant believes that the requirements for topsoil salvage should be reduced to the top 3 – 4 inches, consistent with the guidance cited by CEC Staff (Newton and Claassen, 2003) and based on size restrictions of this site. Biologically, the shallower collection is appropriate because the seed bank is largely contained within the top 2 inches of the soil (Leck et al. 1989, Pake and Venable 1996).
- Applicant's position remains that a per/acre fee to fund the REAT Regional Raven Management Program is not reasonable for the PHPP plant site. Applicant and the resource agencies agree that there is no habitat on the plant site suitable for desert tortoise and that the plant site is not occupied or used by desert tortoise. Furthermore, applicant will implement a raven management plan to minimize subsidies for ravens at the plant site. Applicant therefore does not believe imposition of the per/acre fee is justified for the plant site.
- Staff has included a requirement that compensation lands be provided for potential loss of Swainson's hawk foraging habitat based on the types of native plant communities on the PHPP plant site. Staff has proposed a modification that includes a specific number of acres of Joshua tree woodlands must be included in the compensation acreage, but Applicant believes that approach is not supported by applicable guidance, is potentially infeasible, and should not be required. Instead, Applicant suggests that the compensation land contain the amount of Joshua tree woodland that is "determined equivalent or better quality than the project power plant site."

Qualifications: Witness qualifications are contained in Appendix B.

Time Required for Direct Testimony: The time required will depend to some extent on the issues raised by interveners. Applicant estimates that direct testimony will take approximately one hour.

Form of Testimony: In person.

Topic Area: Hazardous Materials Management

Witnesses: Russ Kingsley

Summary of Testimony: The witnesses will testify as to the specific issues that remain in dispute with the CEC Staff as summarized below.

- Proposed Condition HAZ-2 requires the preparation of a Process Safety Management (PSM) Plan for the HTF system based on the belief that HTF is "highly flammable" (ref. pages 4.4-9, 4.4-19). According to the OSHA PSM regulations, 29 CFR 1910.119 (which cross-references 1910.1200(c)), a flammable liquid is "any liquid having a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture". According to the MSDS for Therminol VP-1®, the flash point of the material is 230°F (110°C). Because Therminol is not classified as a flammable liquid, PSM regulations do not apply to the facility for this material. There are no other materials planned for use at the facility that would exceed their applicable PSM threshold. Accordingly, the Applicant believes that the requirement to prepare a PSM Plan should be deleted from the condition.

  The use of Therminol at elevated temperatures is not unique to solar thermal power plants; Therminol is specifically designed for use in high temperature heat transfer operations. Further, many hydrocarbons are processed in chemical plants and refineries at elevated temperatures and pressures. OSHA was certainly aware of these facts when the PSM regulations were developed. If OSHA wanted to base PSM applicability on the properties of the hydrocarbon under conditions of use, they would have. Instead, OSHA based the applicability of the regulation on the material properties at standard conditions.

- Proposed Condition HAZ-2 also requires the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan. Pursuant to 40 Code of Federal Regulations §112.1(d)(1)(i), the SPCC regulations do not apply to "[A]ny onshore or offshore facility, that due to its location, could not reasonably be expected to have a discharge as described in paragraph (b) of this section. During the workshop and in Staff's Pre-hearing Conference Statement, Staff agreed that a SPCC Plan is not required under the federal Section 112 regulation, but rather would be required by Sections 25270 through 25270.13 of the California H&SC. The Applicant disagrees with this conclusion. Specifically, §25270.3 states: [A] tank facility is subject to this chapter if the tank facility is subject to the oil pollution prevention regulations specified in Part 112 (commencing with Section 112.1) of Subchapter D of Chapter I of Title 40 of the Code of Federal Regulations or the tank facility has a storage capacity of 1,320 gallons or more of petroleum. Petroleum is defined in 25270.2(g) as follows: "Petroleum" means crude oil, or a fraction thereof, that is liquid at 60 degrees Fahrenheit temperature and 14.7 pounds per square inch absolute pressure. Therminol does not meet the definition of petroleum, thus this section of the H&SC does not require the preparation of a SPCC Plan for the HTF system.

  In terms of CEQA mitigation, the facility will be subject to the SWPPP requirements, and the Applicant does not dispute this requirement. SWPPP best management practices (BMP) require protective measures to be employed for any potential source of storm water contamination. A leak of HTF could be a source of storm water contamination, if not controlled. To meet this BMP requirement, the

Applicant has proposed an earthen berm surrounding the solar field to provide secondary containment, and thus would provide the measures necessary for protecting the environment from a release of HTF from the piping.

Therefore, a SPCC Plan is not required by regulation and not necessary to provide CEQA mitigation for a potential release.

Qualifications: Witness qualifications are contained in Appendix B.

Time Required for Direct Testimony: Applicant estimates that direct testimony will take approximately one half hour.

Form of Testimony: In person.

Topic Area: Traffic and Transportation

Witnesses: John Wilson and Tom Barnett

Summary of Testimony: The witnesses will testify as to the lack of necessity for restrictions in proposed Condition TRANS-1, which specify that construction traffic must use a certain specified route which cannot be used during peak hour traffic. These restrictions, when combined with restrictions on the hours of construction set forth in Air Quality Condition of Certification AQ-SC6, would make it impracticable to construct the project. The traffic analysis prepared by CEC Staff's consultant, as well as the analysis in the AFC, demonstrate that traffic could be routed on other roads where it would not cause significant impacts. Furthermore, Staff's traffic analysis indicates that a restriction on traffic using the intersection of Sierra Highway and Avenue M is not needed to avoid impacts.

Qualifications: Witness qualifications are contained in Appendix B.

Time Required for Direct Testimony: Applicant estimates that direct testimony will take approximately one half hour.

Form of Testimony: In person.

For all other topic areas, and for all other issues within the above identified topic areas, Applicant proposes to enter testimony by declaration. Applicant's witnesses in each of these topic areas are identified in Table 1 below. All declarations have been previously filed with Applicant's Exhibits. Witness qualifications are contained in Appendix B.

Table 1

Topic Area	Applicant Witnesses
Project Description	Tom Barnett, Sara Head, Arrie Bachrach, Laurie Lile
Air Quality	Sara Head, Russ Kingsley, Rich Hamel, Tom Barnett, Roy Xu
Biological Resources	Matt Amalong, Alice Karl, Phil Leitner, Nick Ricono, Sara Head
Cultural Resources	Jim Allan
Hazardous Materials	Russ Kingsley
Land Use	Elizabeth Copley, Arrie Bachrach, Laurie Lile, Sara Head
Noise and Vibration	Sara Head
Public Health	Greg Wolffe, Rich Hamel
Socioeconomic Resources	Elizabeth Copley, Sara Head
Soil and Water Resources	Justin Westrum, Mike Flack, Carmen Caceres-Schnell, Roy Xu, Sara Head, Roy Hauger, Laurie Lile

Topic Area	Applicant Witnesses
Traffic and Transportation	John Wilson, Tom Barnett, Roy Hauger, Howard Balentine
Transmission Line Safety and Nuisance	Dave Larsen
Visual Resources	Merlyn Paulson, Howard Balentine
Waste Management	Mike Arvidson, Carl Lindner
Worker Safety	Mike Arvidson
Facility Design	Arrie Bachrach
Geology & Paleontology	Justin Westrum, Cara Corsetti, Carmen Caceres-Schnell
Transmission System Engineering	Tom Barnett, Dave Larson
Alternatives	Tom Barnett, Sara Head, Dave Larsen, Arrie Bachrach, Laurie Lile
Various	Tom Barnett, Arrie Bachrach, Sara Head

E. Topic Areas Upon Which A Party Desires To Cross-Examine Witnesses, A Summary Of The Scope Of Each Such Cross-Examination (Including Voir Dire Of Any Witness' Qualifications), And The Time Desired For Each Such Cross-Examination

Applicant requires approximately one hour to cross-examine Dr. Phyllis Fox concerning information within her letter dated July 19, 2010, entitled *Proposed Paving Emission Reduction Credits for Palmdale Hybrid Power Project*, which is part of Intervenor Center for Biological Diversity Exhibit No. 400. Applicant also requires approximately one hour to cross-examine Greg Tholen, Autumn Wind Associates, Inc., based on his testimony filed on February 4, 2011. The scope of Applicant's cross-examination will cover all issues raised in the testimony of the respective witnesses.

F. A List Identifying Exhibits And Declarations That Each Party Intends To Offer Into Evidence And The Technical Topics To Which They Apply (As Explained In The Following Section On Formats For Presenting Evidence)

Please see **Appendix C**, which identifies the tentative list of exhibits and declarations that Applicant intends to offer into evidence and the technical topics to which they apply. Attached as **Appendix D** is the Supplemental Declaration of Sara Head Regarding Additional Exhibits (Exhibit 145), which identifies two exhibits not identified in previously submitted declarations: (1) Applicant's Exhibit 143, dated July 21, 2010, regarding Applicant's letter to U.S. EPA regarding Supplemental Information for the Application for PSD Permit (with enclosures); and (2) Applicant's Exhibit 144, dated January 26, 2011, regarding Applicant's Rebuttal to "Opening Testimony and Rebuttal to Applicant's Response to Final Staff Assessment by Center for Biological Diversity." Exhibit 143 and 144 were previously docketed and served on the parties.

G. Topic Areas For Which The Applicant Will Seek A Commission Override Due To Public Necessity And Convenience Pursuant To Pub. Resource Code § 25525

Applicant does not anticipate seeking an Energy Commission override due to public necessity and convenience pursuant to Public Resources § 25525.

H. Proposals For Briefing Deadlines, Impact Of Vacation Schedules, And Other Scheduling Matters

Applicant accepts the Committee's ordered March 11, 2011 deadline for submitting opening briefs, and supports CEC Staff's request to move the deadline for filing reply briefs to March 25, 2011.

I. For All Topics, Any Proposed Modifications To The Proposed Conditions Of Certification Listed In The Final Staff Assessment (FSA) Based Upon Enforceability, Ease Of Comprehension, And Consistency With The Evidence

Staff has accepted Applicant's proposed modifications to the following Conditions of Certification, as described in Applicant's comments on the FSA (see **Appendix A**):

- AQ-SC11, AQT-2, AQT-5, AQT-7, AQT-12, AQT-13, AQT-15, AQT-25, AQAB-8, AQAH-6, ABHH-7, AQEG-3 and AQFS-3
- BIO-25
- PAL-4
- TRANS-9
- TLSN-4
- VIS-2

Applicant has either accepted Staff's proposed changes to the following Conditions of Certification as proposed at the Workshop on February 3, 2011, or is willing to forego the changes proposed in Applicant's FSA comments:

- AQ-SC14, AQ-SC15, AQ-SC19, AQT-16
- BIO-13, BIO-18, BIO-24 and BIO-25
- HAZ-9
- TRANS-8
- WASTE-2

As discussed in Section I(C), above, Applicant and Staff will continue addressing the following Conditions of Certification at the Workshop scheduled for February 14, 2011, based on

continuing differences between the Applicant's proposed changes and Staff's proposed changes:

- **AC-SC18** – Related to the offset ratio for NOx and VOC emission reduction credits obtained via transfer from the San Joaquin Valley Air Pollution Control District.

- **BIO-8 and -10** – Related to topsoil salvage requirements.

- **BIO-14** – Related to the per/acre fee applied to the PHPP plant site to fund the REAT Regional Raven Management Program.

- **BIO-17** – Related to requirement to provide a specific number of acres of Joshua tree woodland as compensatory mitigation for potential loss of Swainson's hawk foraging habitat.

- **HAZ-2** – Related to the preparation of a Process Safety Management Plan and a Spill Prevention and Control Countermeasure Plan.

- **TRANS-1** – Related to construction-traffic access to the project site.

DATED: February 9, 2011

Respectfully submitted,

Michael J. Carroll
LATHAM & WATKINS LLP

APPENDIX A
APPLICANT'S COMMENTS ON THE FINAL STAFF ASSESSMENT

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STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

IN THE MATTER OF:	)	DOCKET NO. 08-AFC-9
	)	
APPLICATION FOR CERTIFICATION, FOR THE PALMDALE HYBRID POWER PROJECT BY THE CITY OF PALMDALE	)	APPLICANT'S RESPONSE TO FINAL STAFF ASSESSMENT

On behalf of the City of Palmdale ("Applicant") for the Palmdale Hybrid Power Plant Project (08-AFC-9) ("PHPP"), we hereby submit Applicant's response to the Final Staff Assessment ("FSA"), issued by Staff for the California Energy Commission ("CEC") on December 22, 2010. Applicant is filing this response to the FSA concurrently with, and as part of its testimony, in order to consolidate all apparent areas of disagreement with the Staff into a single document, and hopefully facilitate resolution of outstanding issues prior to the filing of Prehearing Conference Statements and the Evidentiary Hearings. Applicant's response to the FSA is organized by topic area as follows:

- Executive Summary
- Air Quality
- Alternatives (comments only)
- Biology
- Geology and Paleontology
- Hazardous Materials
- Traffic & Transportation
- Transmission Line Safety & Nuisance
- Visual Resources
- Waste Materials

In certain cases, Applicant is proposing changes to the Staff testimony as set forth in the FSA or to proposed Conditions of Certification. In such cases, proposed deletions are made in ~~red strikethrough~~ text and proposed insertions are made in green underlined text.

EXHIBIT 116

I. EXECUTIVE SUMMARY

Applicant noted in comments on the PSA (Exhibit 99) that the PSA variously used a plant site acreage of 377, although 333 acres is the correct number. The FSA continues to refer to 377 acres in some sections, including the Executive Summary, p. 1-2 (*see also* Project Description, p. 3-1; Air Quality, p. 4.1-1; etc.). The actual plant site acreage is 333 acres.

II. AIR QUALITY

A. Offset Ratio for NOx and VOCs

The Applicant has proposed obtaining emission reduction credits (ERCs) from the San Joaquin Valley Air Pollution Control District (SJVAPCD) pursuant to an inter-basin, inter-district transfer to offset project emissions for NOx and VOCs. The FSA confirms that ozone violations in the Mojave Desert area are overwhelmingly caused by emissions from the San Joaquin Valley.[1] As such, the FSA acknowledges the Applicant's offset strategy is "a reasonable approach and has been done in the past."[2]

Rules promulgated by the Antelope Valley Air Quality Management District (AVAQMD) allow for inter-district/inter-basin ERC transfers to satisfy NOx and VOC offset requirements. AVAQMD Rule 1305(C)(3) establishes an offset ratio of 1:3:1 for inter-district/inter-basin transfers of NOx and VOCs. Past projects located in the Mojave Desert area have offset emissions with SJVAPCD-based ERCs in accordance with the AVAQMD rules.[3]

The FSA deviates from past precedent and AVAQMD rules by requiring a 1.5:1 offset ratio instead of the 1.3:1 ratio required by AVAQMD Rule 1305(C)(3). The FSA states, "An emissions offset ratio of 1.5:1 was selected by staff based on SJVAPCD Rule 2201, Table 4.2, which required a 1.5:1 for ERCs located '15 miles or more from the new or modified emissions unit's Stationary Source.'"[4] Even though Staff acknowledges, "the AVAQMD is not bound by the SJVAPCD Rules and Regulations,"[5] Staff applies the 1.5:1 offset ratio because "staff recommends that the Commission use the SJVAPCD Rules and Regulations as guidance for evaluating inter-district and inter-basin ERC transfers that involve large distances between the emission source and ERCs."[6] Staff does not provide any precedent or guidance from the California Air Resources Board (CARB), SJVAPCD or AVAQMD to support applying SJVAPCD Rule 2201 to ERC transfers from the SJVAPCD to the AVAQMD instead of AVAQMD Rule 1305(C)(3).

The PHPP is located within the AVAQMD; thus, the AVAQMD rules apply, not the SJVAPCD rules. The AVAQMD has fully analyzed the offset ratio and determined on technical and legal bases that the 1.3:1 ratio is correct:

> [AVAQMD] determination [regarding the necessary offset ratio

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[1] FSA, p. 4.1-29.
[2] FSA, p. 4.1-30.
[3] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, at pp. 3-4 and Attachment C (examples of applicable past inter-district/inter-basin transfers).
[4] FSA, p. 4.1-30.
[5] *Id.*, p. 4.1-31.
[6] *Id.*

> for inter-district transfers] has been made "in the same manner and to the same extent as the district would do so for fully credited emissions reductions from sources located within its boundaries." The District has properly determined the impact in compliance with the applicable provisions of District Rules 1302 and 1305 and such analysis is reflected in the FDOC. The District is statutorily precluded from performing a different impact analysis for this particular project based solely upon the fact that the proposed ERCs are not located within the District and the air basin, nor would any such additional analysis be warranted.[7]

District Counsel for the AVAQMD reiterated the agency's support for the 1.3:1 offset ratio, and pointed out that the AVAQMD is specifically prohibited from applying a higher offset ratio by AVAQMD Rule 1305(C)(3).[8]

For the reasons outlined above, Applicant believes that AC-SC18 should be revised to conform to AVAQMD Rule 1305(C)(3) for inter-district/inter-basin transfers of NOx and VOCs:

> **AQ-SC18** The project owner shall demonstrate to the satisfaction of the CPM that adequate emission reduction credits have been purchased prior to start of construction of the project. The project emissions of 115 and 40 tons per year of NOx and VOC, respectively, shall be offset at a ratio of 1.3 to one for ERC's within the MDAB or areas in the SJVAB ~~that are within 15 miles of the AVAQMD western boundary~~ (149.5 and 52 tons per year for NOx and VOC, respectively). ~~If ERCs are obtained from locations greater than 15 miles from the western portion of the AVAQMD, an offset ratio of 1.5 to one shall be utilized for those offsets.~~

[7] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, Attachment A (AVAQMD Letter, June 29, 2010, p. 1).

[8] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, Attachment E (AVAQMD Letter dated September 9, 2010.)

B. No EPA-Approved Rule Is Required For Road-Paving PM10 Offsets

The FSA discusses the purported need for an EPA-approved Attainment Demonstration and Maintenance Plan and a State Implementation Plan (SIP)-approved rule to provide for the creation of road paving PM10 offsets within the AVAQMD.[9] Applicant believes this discussion is incorrect and likely stems from an inadvertent error in the first version of the Preliminary Determination of Compliance (PDOC) that incorrectly listed the project area as non-attainment for the federal PM10 standard.[10] The PHPP is not located in a federal PM10 non-attainment area (i.e., the project area is in attainment for federal PM10 air quality standards). Once the error in the PDOC was corrected, the EPA made clear that it did not require a PM10 rulemaking for the PHPP:

> With respect to PMl0 ERCs, we acknowledge that the proposed reductions are to meet the State offset requirements. PHPP is located in an area of the District that is designated attainment for all federal National Ambient Air Quality Standards. We understand that there is no federally required District maintenance plan or other requirement that relies on offsets. Therefore, EPA Region 9 has determined that we will defer to the District and the State to review individual offsets in attainment areas that are required under Antelope Valley AQMD Rule 1305.[11]

The AVAQMD has determined its existing rules provide for the issuance of PM10 ERCs generated from road-paving activities:

> Rule 1305(8)(3) explicitly addresses the use of area and indirect source actual emission reductions as offsets. No additional rulemaking is necessary to allow the use of actual emission reductions from paving of an existing unpaved road as offsets.[12]

District Counsel for the AVAQMD has reiterated this position by letter dated September 9, 2010, concluding that "the AVAQMD does not plan to adopt a specific rule regarding the creation of PM10 offsets from road paving at this time but rather to use the existing applicable provisions of Regulation XIII to quantify, verify and allow use of such ERCs."[13]

For the reasons stated above, Applicant believes that AC-SC19 should be revised as follows to reflect that an AVAQMD rule is not required to generate road paving offsets. In addition, in accordance with the FDOC (Exhibit 109), the PM10 offsets required for the Project are 128 tons per year at a 1 to 1 ratio, not 137 tons (*see also* response to Data Request 114 (Exhibit 56), p. AQ-25, submitted May 1, 2009).

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[9] FSA, p. 4.1-33.

[10] Applicant has previously commented on why rulemaking is not required for road paving offsets, most recently in response to Staff's Status Report No. 8 (Exhibit 110).

[11] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, Attachment F (Letter From EPA to Eldon Heaston, AVAQMD, p. 3, July 27, 2009).

[12] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, Attachment C (AVAQMD comments on Staff's Status Report No. 4, dated July 6, 2010).

[13] *See* Exhibit 110, Applicant's Response to Staff Status Report No. 8, Attachment E.

AQ-SC19 ~~Once the District has adopted one or more rules to bank PM offsets from roadpaving, the~~ The project owner shall pave, with asphalt concrete that meets the current county road standards, unpaved local roads to provide emission reductions of ~~137~~ 128 tons per year of PM10, prior to start construction of the project. Calculations of PM10 emission reduction credits shall be performed in accordance with Sections 13.2.1 and 13.2.2 of the U.S. EPA's AP-42 "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources", Fifth Edition.

The Applicant also requests that the Verification requirement be revised to reflect a more reasonable time period for submitting road paving plans to the CPM. The FSA's "one year prior to the start of construction" timing will significantly impact project cost and schedule without a commensurate environmental benefit. The 60-day period is also consistent with the Victorville 2 project.

Verification: At least ~~one year~~ 60 days prior to start of construction, the project owner shall submit to the CPM plans and other documents to demonstrate compliance with this condition. ~~Construction~~ Paving shall not begin until the CPM has approved ~~all ERCS~~ the road paving plan. This approval shall be done in consultation with the District. Documents shall include a list and pictures of candidate roads to be paved, their actual daily average traffic count including classifications of vehicles (ADT), and daily vehicle miles travel (DVMT), their actual road dust silt content, and calculations showing the appropriate amount of emissions reductions due to paving of each road segment. All paving of roads shall be complete at least 15 days prior to start construction of the project.

C. Proposed Revisions to Other Air Quality Conditions of Certification

1. AQ-SC11

The Applicant is requesting either that Condition AQ-SC11 be deleted, or if not deleted, that additional changes be made to the condition to more clearly tie the requirement to an air quality impact. A leak detection program of this complexity is not warranted for a relatively small solar field of 50 MW. In most jurisdictions and as defined in most regulations and guidance documents related to leak detection of fugitive components, HTF is a heavy liquid and as such is specifically excluded from a leak detection program, with limited exceptions (e.g., pump seals). Also, the Best Available Control Technology threshold in the AVAQMD is 25 pounds per day. The fugitive emissions from PHPP are predicted to be far less than that at only 1.1 pounds per day (0.2 tons per year).

The Applicant recognizes that the CEC has some uncertainty in the level of fugitive emissions from solar thermal projects, and thus has required leak detection for other much larger projects (250 MW or more) utilizing similar technology. Given the expected low level of emissions

for PHPP, the Staff has only proposed leak monitoring if losses of HTF are greater than 0.2 tons per year as the threshold that would trigger the requirement to implement AQ-SC11. It appears that this threshold was established based on the Applicant's estimate of air emissions. However, it is important to remember that HTF may escape the piping network in several ways that do not contribute to air emissions, for example liquid leaks from fitting malfunctions (seal ruptures, broken piping, etc.) or normal maintenance activities such as pump maintenance. At ambient conditions, the vapor pressure of HTF is very low, and air emissions would not occur. For this reason, if the Applicant's recommendation to delete the condition is not accepted, the condition should be modified as shown below.

> **AQ-SC11** The project owner shall establish an inspection and maintenance program to determine, repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.
>
> A. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating period.
>
> B. The project owner shall maintain record of the amount of HTF replaced on a monthly basis for a period of five years. The Applicant may subtract quantifiable liquid losses from the 'replaced' total to determine the amount lost to atmosphere. Any HTF losses that cannot be quantified as liquid losses are presumed lost to atmosphere. Should HTF loss to the atmosphere exceed the Applicant's estimate of 0.2 tons per year, the project owner shall implement the following leak detection and repair measures:
>
> ...

2. AQ-SC14 and AQ-SC15

The Applicant requests that AQ-SC14 and AQ-SC15 be deleted in their entirety, as they are either redundant or contradictory, and cannot be implemented as written. Both AQ-SC14 and AQ-SC15 require leak detection monitoring for the HTF expansion tank appurtenances; however, as written, they lack the necessary specificity to actually implement the requirement. These conditions would require a monitoring schedule (e.g., quarterly monitoring) to implement, otherwise, the requirement would apply continuously. Continuous monitoring is impractical for every flange and fitting on every tank. If HTF losses exceed 0.2 tons per year; AQ-SC11 would require leak monitoring for the tank appurtenances, making AQ-SC14 and AQ-SC15 redundant and unnecessary. If the leak rate does not exceed 0.2 tons per year, AQ-SC14 and AQ-SC15 would require monitoring and AQ-SC11 would not, making AQ-SC14 and AQ-SC15 contradictory. [Note that the Applicant has requested changes to AQ-SC11 also to clarify the requirements.] Therefore, the Applicant recommends deleting these conditions, as follows:

~~**AQ-SC14** Expansion tank roof appurtenances shall not exhibit emissions exceeding 10,000 ppmv as methane measured with an instrument calibrated with methane and conducted in accordance with U.S. Method 21.~~

~~**Verification**: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.~~

~~**AQ-SC15** Each expansion tank shall be maintained leak-free. A "leak" is defined as the dripping of liquid volatile organic compounds at a rate of three or more drops per minute, or vapor volatile organic compounds in excess of 10,000 ppm as equivalent methane as determined by EPA Test Method 21.~~

~~**Verification**: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.~~

3. AQT-2

The Verification portion of Condition AQT-2 requires that the Project owner conduct monthly laboratory analysis of fuel sulfur content. As fuel sulfur content is routinely determined by the fuel supplier, this imposes an operational burden and expense on the Project owner that is unnecessary. Consequently, the Applicant requests the verification portion of this condition be modified as shown below:

> **AQT-2** This equipment shall be exclusively fueled with pipeline quality natural gas with a sulfur content not exceeding 0.2 grains per 100 dscf on a rolling twelve month average basis, and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles. Compliance with this limit shall be demonstrated by providing evidence of a contract, tariff sheet or other approved documentation that shows that the fuel meets the definition of pipeline quality gas.
>
> **Verification:** The project owner shall complete or obtain from the fuel supplier, on a monthly basis, a laboratory analysis showing the sulfur content of natural gas being burned at the facility. The sulfur analysis reports shall be incorporated into the quarterly compliance reports.

4. AQT-5

The wording of AQT-5 is not entirely consistent with the wording of Condition 5 of the AVAQMD FDOC. To avoid confusion, the Applicant requests that the CEC adopt the wording of the FDOC, as shown below:

AQT-5 Emissions of CO and NOx from this equipment shall only exceed the limits contained in Condition AQT-4 during startup and shutdown periods as follows:

a. Startup is defined as the period beginning with ignition and lasting until the equipment has reached operating permit limits, i.e., the applicable emission limits listed in Condition AQT-4. Cold startup is defined as a startup when the CTG has not been in operation during the preceding continuous 48 hours, although a startup after an aborted partial cold start is still considered a cold start (a cold start that does not reach 85% output). Other startup is defined as a startup that is not a cold startup. Shutdown is defined as the period beginning with the lowering of equipment from base load and lasting until fuel flow is completely off and combustion has ceased.

...

5. AQT-7

The verification of "compliance tests and hours of operation" proposed for AQT-7 sections (e) and (f), while appropriate for the stationary sources subject to the condition, is not appropriate for the fugitive emissions from HTF leaks or dust for vehicles use in the solar field. Fugitive emissions should be calculated using an appropriate methodology. To clarify the compliance requirement, the Applicant proposes the changes to the verification shown below:

AQT-7 Emissions from this facility, including the duct burner, auxiliary equipment, engines, cooling tower and fugitive dust for vehicle use in the solar field, shall not exceed the following emission limits, based on a rolling 12 month summary:

...

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by AQT-17. Note, the requirement for compliance tests applies only to the stationary sources and fugitive emissions will be verified according to a District-approved calculation protocol.

6. AQT-12

The wording of Condition AQT-12 is not entirely consistent with the wording of Condition 12 of the AVAQMD FDOC. In addition, there appears to be a typographical error in the Verification referencing MDAQMD. To avoid confusion, the Applicant requests that the CEC adopt the wording of the FDOC, as shown below:

AQT-12 Emissions of NOx, CO, oxygen and ammonia slip shall be monitored using a Continuous Emissions Monitoring

System (CEMS). Turbine fuel consumption shall be monitored using a continuous monitoring system. Stack gas flow rate shall be monitored using either a Continuous Emission Rate Monitoring System (CERMS) meeting the requirements of 40 CFR 75 Appendix A or a stack flow rate calculation method. The o/o shall install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan, ~~and~~ AVAQMD Rule 218, 40 CFR 60 and/or 40 CFR 75 as applicable. ~~and they shall be installed prior to initial equipment startup after initial steam blows are completed. Two (2) months prior to installation the operator shall submit a monitoring plan for District review and approval. The o/o shall notify the APCO and the USEPA of the date of first fire and the date of initial commercial operation of each affected unit.~~

Verification: The o/o shall install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan and ~~MDAQMD~~AVAQMD Rule 218, and they shall be installed prior to initial equipment startup after initial steam blows are completed. Two (2) months prior to installation the operator shall submit a monitoring plan for District review and approval.

7. AQT-13

The Verification section of AQT-13 is inconsistent with the condition itself with respect to submittal timelines. To avoid confusion, the Applicant requests changes shown below:

AQT-13 The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing.

Verification: The project owner shall notify the District and the CPM within ten (10) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM within ~~60~~ 45 days of the date of the tests.

8. AQT-15

The Verification section of AQT-15 is inconsistent with typical AVAQMD notification timelines. To avoid confusion, the Applicant requests the changes shown below:

> **AQT-15** The o/o shall, at least as often as once every five years (commencing with the initial compliance test), include the following supplemental source tests in the annual compliance testing:
>
> ...
>
> **Verification:** The project owner shall notify the District and the CPM within ~~seven (7)~~ ten (10) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM within 60 days of the date of the tests.

9. AQT-16

The requirement in AQT-16(a) is inconsistent with Condition 16 of the FDOC. In addition, the Verification for this condition is inappropriate for the condition. To avoid confusion and to facilitate verification, the Applicant recommends the changes shown below:

> **AQT-16** Continuous monitoring systems shall meet the following acceptability testing requirements from 40 CFR 60 Appendix B (or otherwise District approved):
>
> a. For NOx, ~~Performance Specification 2.~~40 CFR 75.
>
> ...
>
> **Verification:** ~~At least 60 days prior to construction of the turbine stacks, the project owner shall provide the District and CPM, for approval, a detailed drawing and a plan on how the measurements and recordings, required by this condition, will be performed by the chosen monitoring system.~~ The o/o shall install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan and AVAQMD Rule 218, and they shall be installed prior to initial equipment startup after initial steam blows are completed. Sixty (60) days prior to installation, the operator shall submit a monitoring plan for District review and approval.

10. AQT-25

The Verification section imposes requirements for compliance source testing that are not required by the condition itself related to testing during start-up and shutdown. The condition clearly references only those limits in condition 4 (or AQT-4 in the FSA numbering) that relate to normal hourly emission limits. In addition, AQT-25 is inconsistent with typical AVAQMD notification timelines. Therefore, the Applicant is requesting that the additional start-up and shutdown testing specified in the Verification for AQT-25 be deleted, as shown below:

> **AQT-25** Within 60 days after achieving the maximum firing rate at which the facility will be operated, but not later than 180 days after initial startup, the operator shall perform an initial compliance test. This test shall demonstrate that this equipment is capable of operation at 100% load in compliance with the emission limits in Condition AQT-4.
>
> **Verification:** No later than 30 working days before the commencement of the source tests, the project owner shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. ~~In addition, the source tests shall include a minimum of three start-up and three shutdown periods and shall include at least one cold start, and one hot or warm start.~~ The project owner shall incorporate the District and CPM comments into the test plan. The project owner shall notify the District and the CPM at least ~~seven (7)~~ ten (10) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within 60 days of the source testing date.

11. AQAB-8

For the Auxiliary boiler, the FSA is missing Condition 8 from the FDOC. To ensure consistency, the Applicant recommends that Condition AQAB-8 be added to the FSA, as follows:

> **AQAB-8** A non-resettable four-digit (9,999) hour timer shall be installed and maintained on this unit to indicate elapsed operating time.
>
> **Verification:** The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

12. AQHH-6

The Verification section of AQHH-6 is inconsistent with typical AVAQMD notification timelines. To avoid confusion, the Applicant requests changes shown below:

> **AQHH-6** The o/o shall perform the following annual compliance tests on this equipment in accordance with the AVAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
>
> ...
>
> **Verification:** The project owner shall notify the District and the CPM within ~~seven (7)~~ ten (10) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM within 60 days of the date of the tests.

13. ABHH-7

For the HTF heater, the FSA is missing Condition 7 from the FDOC. To ensure consistency and avoid confusion, the Applicant recommends that Condition ABHH-7 be added to the FSA, as follows:

> **AQHH-7** A non-resettable four-digit (9,999) hour timer shall be installed and maintained on this unit to indicate elapsed operating time.
>
> **Verification:** The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

14. AQEG-3

Condition AQEG-3 is not consistent with emergency generator Condition 3 of the AVAQMD FDOC in that it lacks the 200 hour annual operating limit. To avoid confusion, the Applicant requests the changes shown below:

> **AQEG-3** This unit shall be limited to use for emergency power, defined as when commercially available power has been interrupted. In addition, this unit may be operated as part of a testing program that does not exceed 50 hours of testing or maintenance per calendar year. Furthermore, pursuant to District Rule 1110.2, this unit shall be operated less than 200 hours per

calendar year. This requirement includes usage during emergencies.

15. AQFS-3

Condition AQFS-3 is not consistent with fire water pump engine Condition 3 of the AVAQMD FDOC in that it lacks the 200 hour annual operating limit. To avoid confusion, the Applicant requests the changes shown below:

> **AQFS-3** This unit shall be limited to use for emergency fire fighting. In addition, this unit may be operated as part of a testing program that does not exceed 50 hours of testing or maintenance per calendar year. Furthermore, pursuant to District Rule 1110.2, this unit shall be operated less than 200 hours per calendar year. This requirement includes usage during emergencies.

III. ALTERNATIVES

The FSA acknowledges that "the applicant's proposed transmission line route has no unmitigable significant impacts."[14] The FSA includes a substantially expanded alternatives analysis based on a March 8, 2010 comment letter received from the County of Los Angeles. Alternatives Appendix A identifies two new alternate transmission line routes (Alternative Route 4 and Alternative Route 5).

Staff concludes that both routes are feasible from a cost and engineering standpoint. Staff also concludes that although the Applicant's proposed route does not result in any significant impacts, Staff's Alternative Routes 4 and 5 "would reduce impacts to air quality, biological resources, hazardous materials, public health, soil and water resources, transmission line safety and nuisance and worker safety."[15]

Although the Applicant continues to believe that the expanded alternative analysis was not required by CEQA,[16] the Applicant concurs with Staff's conclusions that neither the proposed transmission line route nor Alternative Routes 4 or 5 will result in a significant environmental impact. However, with respect to some of the specifics of the Staff's analysis of Alternative Routes 4 and 5, Applicant provides the following comments.

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[14] FSA, Alternatives Appendix A, p. A-1; *see also* FSA, p 6-1.

[15] FSA, Alternatives Appendix A, p. A-1.

[16] Applicant identified in its responses to Status Report No. 8 (Exhibit 110) that, although CEQA requires Staff to respond to public comments, the Los Angeles County comment letter did not warrant a substantially expanded alternatives analysis (e.g., the approximately 230-page supplemental alternatives analysis in FSA Appendix A).. The Los Angeles County comment letter does not provide any new information or analysis that would materially change the analysis provided by the AFC or the PSA; thus, Applicant continues to believe that an expanded new analysis was not warranted to address the County of Los Angeles comment letter. (*See* Title 14, California Code of Regulations, § 15204(a); *see City of Long Beach v. Los Angeles Unified Sch. Dist.*, 176 Cal. App. 4th 889, 901 (2009) ["The level of detail required in a response to a comment depends on...the extent to which the matter is already addressed in the DEIR"].)

A. Comments on Staff's Feasibility and Cost Determination for Alternative Route 4

Based on the Applicant's review of the Alternatives Appendix A, it is not clear whether the potential benefits associated the underground portions of Alternative Route 4 are sufficient to offset the potential costs, construction impacts, and reliability concerns associated with the development of such underground facilities.

1. Costs

In its analysis, Staff assumed that the per-unit cost of an overhead PHPP gen-tie line would be $2 million per mile while that for an underground gen-tie line would be $7 million per mile. Staff concludes that overall, Alternative Route 4 would be less costly than the Applicant's proposed route. However, Staff also notes that the costs of underground facilities can vary significantly depending upon the conditions and terrain in which the line is to be built. The report entitled "Out of Sight, Out of Mind Revisited" which was prepared for the Edison Electric Institute (EEI) in December 2009[17] contains the following information regarding the costs for new overhead (OH) and underground (UG) transmission lines in rural and suburban environments.[18]

TABLE 1
COSTS PER MILE FOR NEW TRANSMISSION LINES[19]

	Overhead Lines ($Million/Mile)		Underground Lines ($Million/Mile)		Ratio UG vs OH	
	Suburban	Rural	Suburban	Rural	Suburban	Rural
Minimum Value	0.20	0.15	1.10	1.10	5.5	7.3
Average Value	1.61	1.22	7.53	6.35	4.7	5.2
Maximum Value	3.50	2.28	16.5	10.00	4.7	4.4

The following conclusions can be drawn from a review of the information in Table 1:

- There can be a significant difference between the costs of building new transmission lines depending on the environment in which they are located and whether they are overhead or underground.
- The "minimum" costs are likely for low voltage facilities and are not pertinent to this evaluation for the PHPP.
- The "average" costs for overhead lines are of the same order of magnitude as the assumed costs for an overhead PHPP gen-tie line. As a result the cost ratios associated with the average costs are most pertinent for the following discussion for

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[17] Kenneth L. Hall, P.E., Hall Energy Consulting, Inc., Prepared for Edison Electric Institute, Out of Sight, Out of Mind Revisited: An Updated Study on the Undergrounding Of Overhead Power Lines, December 2009, available at: http://www.eei.org/ourissues/electricitydistribution/Documents/UndergroundReport.pdf ("Out of Sight, Out of Mind Revisited"). This document is incorporated by reference in its entirety to these FSA comments.

[18] Customer density in a rural environment is 50 or fewer customers per square mile while that in a suburban environment ranges from 51 to 149 customers per square mile.

[19] Out of Sight, Out of Mind Revisited, supra, Figure 6.1.

the PHPP.

- As shown in Table 1 the "UG to OH" ratio based on average costs ranges from 4.7 for a suburban environment to 5.2 for a rural environment.

TABLE 2 COMPARISON OF ALTERNATIVES				
	Applicant's Proposed Route	Alternative Route 4		
		Per CEC FSA	Per EEI* Suburban	Per EEI Rural
Assumed Lengths (Miles)				
Overhead Line	36.5	6.05	6.05	6.05
Underground Line	0	6.75	6.75	6.75
Total	36.5	12.80	12.80	12.80
Estimated Costs ($Millions)				
Overhead Line	89.2	12.1	12.1	12.1
Underground Line	0.0	47.3	63.5	70.2
Total	89.2	59.4	75.6	82.3

* Edison Electric Institute, Out of Sight, Out of Mind Revisited: An Updated Study on the Undergrounding Of Overhead Power Lines, December 2009.

Table 2 is based on the "Alternatives Appendix A Table 1" included in the FSA.[20] The information summarized in Table 2 shows that the estimated costs associated with the PHPP gen-tie line could vary significantly depending on the costs assumed for underground construction contemplated by Alternative Route 4. The information in Table 2 demonstrates that the relative costs of the proposed route and Alternative Route 4 are comparable depending on the underlying assumptions, particular when considering information in Edison Electric Institute, Out of Sight, Out of Mind Revisited: An Updated Study on the Undergrounding Of Overhead Power Lines, December 2009. Thus, it is not at all clear that Alternative Route 4 would result in the cost savings predicted by Staff.

2. Construction and Maintenance

The FSA suggests that most of the proposed UG section of Alternative Route 4 would be installed in City streets and would share the route of the proposed PHPP gas line and water supply line and notes that the trench for the UG line would be 7-10 feet wide and 6 feet deep. Concerns with respect to FSA, Alternatives Appendix A, conclusions regarding Alternative Route 4 include:

- The impacts on traffic when the pertinent streets were unavailable during construction and if a fault were to occur on the line requiring that all or sections of it be replaced.

[20] Table 2 includes information on assumed lengths and costs associated with: The "Applicant's Proposed Route" as discussed in the FSA; Alternative Route 4 (as also discussed in the FSA) if: The costs for underground lines is $7 million per mile as assumed in the FSA; The costs for underground lines is $9.4 million per mile per the EEI information for a suburban environment; The costs for underground lines are $10.4 million per mile per the EEI information for a rural environment.

- The impacts which a failure of either the gas or water line could have on the transmission line and the efforts required to mitigate such impacts.

- The potential for damage to the transmission line should it be struck by equipment performing maintenance or repair on other underground facilities in the proximity of the line. Such facilities could include the PHPP water and gas lines mentioned above or other facilities (such as water mains, sewer lines, and other gas lines as noted in the FSA).

Accordingly, it is unclear whether Alternative Route 4 is as feasible as the Applicant's proposed route in terms of construction and maintenance.

3. Reliability and Availability

Alternatives Appendix A Table 5 in the FSA compares "typical" reliability statistics for overhead and underground lines. This information in presented in Table 3.

TABLE 3
TYPICAL RELIABILITY STATISTICS

	Overhead Lines	Underground Lines	Ratio
Forced Outage Rate (Outages/Year/Mile)	0.005	0.00165	3.3
Mean Time Between Failure (Years)	200	606	3.0
Mean Time to Repair (Days)	0.375	21	56
Unavailability (Hours/Year)	0.045	0.832	18.5

The following conclusions can be based on a review of the information in Table 3:

- The "mean time to repair" for an underground line could be over 50 times as long as would be the case with an overhead line.

- The "unavailability" of an underground line could be 18 times higher than that for an overhead line.

Accordingly, Table 3 demonstrates that Alternative Route 4 may have lower reliability and availability characteristics than the Applicant's proposed route in certain respects.

B. Comments on Relative Environmental Impacts of Alternative Routes 4 and 5 Compared to the Proposed Transmission Line Route

Staff concludes that although the Applicant's proposed route does not result in any significant impacts, Alternative Routes 4 and 5 "would reduce impacts to air quality, biological resources, hazardous materials, public health, soil and water resources, transmission line safety and nuisance and worker safety."[21] A closer review of Appendix A demonstrates that Alternative Routes 4 and 5 may not reduce impacts for some of these topic areas and may in fact increase impacts for land use, socioeconomics and traffic. Applicable offers the following comments by topic area:

[21] FSA, Alternatives Appendix A, p. A-1.

- **Cultural Resources** – Although neither the proposed route nor Alternative Routes 4 or 5 will have a significant impact on Cultural Resources, Alternative Routes 4 and 5 will have the potential to affect a much higher number of known historic-period archaeological resources.[22] Accordingly, Alternative Routes 4 and 5 may have greater impact on Cultural Resources than the proposed route.

- **Land Use** – Although neither the proposed route nor Alternative Routes 4 or 5 will have a significant impact on Land Use, Alternative Routes 4 and 5 will result in potential inconsistencies with land use zoning and policies.[23] The proposed route will be consistent with all applicable LORS. Alternative Routes 4 or 5 also require the addition of another Condition of Certification, LAND-4. Accordingly, Alternative Routes 4 and 5 may have greater Land Use impact than the proposed route.

- **Public Health** – Although neither the proposed route nor Alternative Routes 4 or 5 will have a significant impact on Public Health, Staff concludes that construction of the proposed route would lead to higher public exposure of construction emissions than Alternative Routes 4 or 5 because of the longer route.[24] However, Staff does not consider that the proposed route is substantially more isolated than Alternative Routes 4 and 5 (i.e., located on undeveloped lands or areas with low population densities), likely resulting in a lower total public exposure. Accordingly, it is unclear whether Alternative Routes 4 and 5 will have a higher or lower impact on Public Health than the proposed route.

- **Socioeconomics** – Although neither the proposed route nor Alternative Routes 4 or 5 will have a significant impact on Socioeconomics, Alternative Routes 4 or 5 will be more disruptive to local businesses and residents because of potential road closures to major traffic arterials and disruptions to local streets. Accordingly, Alternative Routes 4 and 5 may have greater Socioeconomic impact than the proposed route.

- **Traffic & Transportation** – Although neither the proposed route nor Alternative Routes 4 or 5 will have a significant impact on Traffic & Transportation, Staff acknowledges, "Alternative Route 5 would have a greater potential for requiring road closures because of the higher number of overhead transmission line crossings at public roadways (18 at-grade crossings) versus approximately six (6) at-grade overhead crossings with implementation of Alternative Route 4. Furthermore, eight (8) of the crossings for Alternative Route 5 are major arterials."[25] Accordingly, traffic impacts and road closures associated with Alternative Routes 4 and 5 may have a greater adverse effect on local economies and traffic than the proposed route because the proposed route is more isolated from densely populated areas.

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[22] FSA, Alternatives Appendix A, p. A-129, Table 3.3-3.

[23] FSA, Alternatives Appendix A, p. A-162.

[24] *See* FSA, Alternatives Appendix A, p. A-168.

[25] FSA, Alternatives Appendix A, p. A-168.

IV. BIOLOGY

The Applicant provides the following comments and proposed revisions for the Biology Conditions of Certification (COC). Note, in some instances the entire COC is not provided because of its length; such text is left out only to keep down the length of the FSA comments. All proposed deletions are made in ~~red strikethrough~~ text and proposed insertions are made in green underlined text.

A. Topsoil Salvage Requirements

In the Applicant's comments on the PSA (Exhibit 106) regarding proposed Conditions of Certification BIO-8 and BIO-10, Applicant requested that the requirements for topsoil salvage be reduced to the top 3 – 4 inches, consistent with the guidance cited by Staff (Newton and Claassen, 2003) and based on size restrictions of this site. Biologically, the shallower collection is appropriate because the seed bank is largely contained within the top 2 inches of the soil (Leck et al. 1989, Pake and Venable 1996). While we appreciate that Staff did consider our request and made some other changes, this request regarding the amount of topsoil was not accepted. In the FSA Response to Public and Agency Comments (p. 4.2-84), Staff rejects the Applicant's request based on the requirement for 6 – 8 inches being consistent with other recent solar projects, specifically the Calico (08-AFC-13) and Rice (09-AFC-10) solar projects. However, no justification was provided why this amount of topsoil is needed for PHPP. We note that in general the solar projects that were in the expedited permitting track and/or hoping to qualify for American Recovery and Reinvestment Act (ARRA) funding were not prone to question some requirements so as to not delay their approvals. Therefore, we do not find consistency with recent solar projects that go beyond what is common practice and/or what is recommended in cited guidance documents for the size of stockpiles to be a compelling reason to include overly onerous requirements.

We request that the Applicant's comments on the PSA regarding BIO-8 and BIO-10 be reconsidered as shown below:

BIO-8:

16. Stockpile Topsoil. To increase chances for revegetation success, topsoil shall be stockpiled from the project site ~~and along project linear features~~ for use in revegetation. The top two (2) to three (3)~~six (6) to eight (8)~~ inches of native topsoil from the least disturbed locations and only areas that are relatively free of noxious weeds shall be used as a source of topsoil. ~~All other e~~ Elements related to the collection and stockpiling of topsoil for use shall be as described in *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003, pp. 39-40).

BIO-10:

2. Topsoil Salvage. Topsoil shall be stockpiled from the project site for use in revegetation of temporarily ~~the~~ disturbed soils. Two (2) to three (3)~~Six (6) to eight (8)~~ inches of soil below shall be scraped and separately stockpiled for use in revegetation

of temporarily disturbed areas. ~~All other e~~Elements related to the collection and stockpiling of topsoil shall be conducted as described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003).

Literature Cited:

Leck, M.A., V.T. Parker and R. L. Simpson. 1989. Ecology of soil seed banks. Academic Press, Inc. San Diego, CA. 444 pp.

Newton, G. A. and V. P. Clausson, 2003. Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making. California Department of Conservation, California Geological Survey. 228 p.

Pake, C.E. and D. L. Venable. 1996. Seed banks in desert annuals: implications for persistence and coexistence in variable environments. Ecology 77(5):1427-1435.

B. Desert Tortoise Requirements

In the Applicant's comments on the PSA (Exhibit 106) regarding proposed Condition of Certification BIO-13, Applicant requested that the requirements related to handling of desert tortoise be deleted as the Applicant was not seeking take protection for this species from the CDFG, since its occurrence on the PHPP power plant site is considered highly unlikely based on the results of protocol surveys. However, in the FSA Response to Public and Agency Comments (p. 4.2-85), Staff recommends the language related to desert tortoise remain as proposed in the PSA, since these and other conditions would serve as the PHPP's Section 2018 Incidental Take Permit. Therefore, Applicant has reconsidered and agrees to accept most of Staff's recommended condition BIO-13 (as well as BIO-2, BIO-3, BIO-7 and BIO-8) except for requirements related to a translocation plan. Because Applicant considers the occurrence of desert tortoise to be extremely low on the plant site, and USFWS, CDFG and Staff agree with this opinion, we request that the preparation of a translocation plan only be required if a desert tortoise or recent sign is found on the plant site during the first clearance survey for desert tortoise.

Tortoises are highly unlikely on the plant site. Focused surveys conducted in 2006 on the power plant site and in 2008 on the entire project and buffer (zone of influence [ZOI]) found no tortoises or tortoise sign. While a potential burrow was found during 2008 surveys on the 3,960-foot ZOI transect west of the power plant site, it was sufficiently questionable that the associated species was undetermined. Focused surveys conducted in 2008 on adjacent Air Force Plant 42 also did not detect desert tortoise or sign (Hagen 2008). The highly fragmented nature of the project vicinity - highways, railroad tracks, intense urbanization and agriculture) make it highly unlikely that desert tortoises are present in and could wander onto the plant site from adjacent lands. Known occupied habitat is 16 miles northeast of the plant site.

Furthermore, desert tortoise are presumed to be absent on the reclaimed water pipeline, potable water pipeline, natural gas supply pipeline, and sanitary wastewater pipeline, based on the survey results from two years of focused surveys, plus other data from historic and recent surveys and assessments. Although no tortoise sign was observed during transmission line surveys, there is a low chance that desert tortoises are present along the north-south portion of transmission line segment 1 and the southeast portion of transmission line segment 2, because of the presence of

suitable habitat in the corridor and relatively uninterrupted habitat connected to documented tortoise habitat 9-12 miles northeast. However, it is unknown if tortoises occupy the intervening habitat.

Because of the extremely low likelihood of tortoises on the plant site, and low likelihood on the linear facilities, a desert tortoise translocation plan is unwarranted. Instead, if tortoise sign or a tortoise is observed on the plant site during the first clearance, a translocation plan will be prepared and submitted for approval to the USFWS, CDFG and CPM, an approach that is identical to that for burrowing owls and Mohave ground squirrels. Approvals will be required prior to moving any tortoise to an approved translocation site. The translocation plan will discuss the translocation location or disposition of the tortoise(s)), health analyses, and studies of the recipient population and translocated tortoises, if any. Measures will be relevant to the fully segregated, isolated nature of the tortoise habitat on and in the vicinity of the plant site and directed toward species recovery.

A few other changes that were made in Applicant's PSA comments (Exhibit 106), which we believe add to the clarity and continued consistency with requirements, are also included below.

> **BIO-13** The project owner shall undertake appropriate measures to manage construction at the plant site and linear facilities in a manner to avoid impacts to desert tortoise. Methods for clearance surveys, fence installation, and other procedures shall be consistent with those described in the *Guidelines for Handling Desert Tortoise During Construction Projects* (Desert Tortoise Council 1999) or more current guidance provided by CDFG and USFWS. These measures include, but are not limited to, the following:
>
> 1. Fence Installation. Prior to ground disturbance, the entire plant site shall be fenced with permanent desert tortoise-exclusion fence. To avoid impacts to desert tortoise during fence construction, the proposed fence alignment shall be flagged and the alignment surveyed within 24 hours prior to fence construction. Surveys shall be conducted by the Designated Biologist using techniques approved by the USFWS and CDFG. Biological Monitors may assist the Designated Biologist under his or her supervision.
>
> These surveys shall provide 100% coverage of all areas to be disturbed during fence construction and an additional transect along both sides of the proposed fence line. This fence line transect shall cover an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 30 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with USFWS-approved protocol.

a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. Fence Material and Installation. The permanent tortoise exclusionary fencing shall be constructed in compliance with current USFWS guidelines. ~~consist of galvanized hard wire cloth 1 by 2 inch mesh sunk 12 inches into the ground, and 24 inches above ground (USFWS 2008b, Appendix D).~~

c. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises, including gates that would exclude public access to the PHPP site.

d. Tower Fencing. If tortoises are discovered during clearance surveys of the linear routes, the tower locations shall be temporarily fenced with tortoise exclusion fencing to prevent desert tortoise entry during construction. Temporary fencing must follow current USFWS guidelines for permanent fencing and supporting stakes shall be sufficiently spaced to maintain fence integrity.

e. Fence Inspections. Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing in the utility corridors, the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during/following all major rainfall events. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within two days of observing damage. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing must be inspected weekly and, where drainages intersect the fencing, during and immediately following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the utility corridor or tower site for tortoise.

2. Desert Tortoise Clearance Surveys. Following construction of the tortoise exclusionary fencing around the Plant Site, all fenced areas shall be cleared of tortoises by the Designated Biologist, who may be assisted by Biological Monitors. A minimum of two clearance surveys, with negative results, must be completed, and these must coincide with heightened desert tortoise activity from late March through May and during October. To

facilitate seeing the ground from different angles, the second clearance survey shall be walked at 90 degrees to the orientation of the first clearance survey.

3. Relocation for Desert Tortoise. If desert tortoises are detected on the PHPP plant site during clearance or other activities, the owner shall coordinate with the USFWS, CDFG, and CPM regarding the disposition of the animals. If located during clearance surveys within the transmission line project-route, the tortoise would be allowed to continue unimpeded, out of harm's way. Only in the event that a tortoise needed relocation to keep it safe would ~~impact area~~ the Designated Biologist ~~shall~~ move the tortoise the shortest possible distance, keeping it out of harm's way but still within its home range; the USFWS, CDFG, and CPM would be contacted following this action. Desert tortoise encountered during construction of any of the utility corridors shall be similarly treated in accordance with the techniques described in the *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1999) or more current guidance on the USFWS website. Any person handling tortoise must be ~~trained and~~ approved by the USFWS and CDFG. ~~and be on site during ground disturbance or construction. A site where tortoises will be moved must be pre-approved, and acquired prior to ground disturbing activities. The health of any tortoise to be translocated must be assessed prior to moving; a quarantine site located for any ill tortoise must be designated. The host population of tortoise surveyed prior to any translocated tortoise being moved, and a study to determine the efficacy of the translocation and impact to host population be conducted for a minimum of 5 years.~~

If tortoise sign or a tortoise is observed on the plant site during the first clearance survey, a translocation plan will be prepared and submitted for approval to the USFWS, CDFG and CPM. Approvals will be required prior to translocating any tortoise.

4. Burrow Inspection. All potential desert tortoise burrows within the fenced area shall be searched for presence. In some cases, a fiber optic scope may be needed to determine presence or absence within a deep burrow. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined. ~~Tortoises excavated from burrows shall be translocated to unoccupied natural or artificial burrows immediately following excavation in an area approved by the Designated Biologist if environmental conditions warrant immediate relocation.~~

5. Burrow Excavation. Burrows inhabited by tortoises shall be excavated by the Designated Biologist or other approved handler, using hand tools, and then collapsed or blocked to prevent re-occupation. If excavated during May through July, the Designated Biologist shall search for desert tortoise nests/eggs. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by the Designated Biologist or other handlers approved by the USFWS, CDFG, and CPM (see Number 3, above) in accordance with the USFWS-approved protocol (Desert Tortoise Council 1999) or more current guidance on the USFWS website.

6. Monitoring During Clearing. Following construction of exclusion fencing and completion of clearance surveys ~~desert tortoise clearance removal from the plant site and translocation to a new site,~~ heavy equipment shall be allowed to enter the project site to perform earth work such as clearing, grubbing, leveling, and trenching. A Biological Monitor shall be onsite during initial clearing and grading activities. Should a tortoise be discovered, the measures outlined in Paragraph 3 shall be followed. ~~it shall be translocated as described above in accordance with the Desert Tortoise Translocation Plan.~~

7. Reporting. The Designated Biologist shall record the following information for any desert tortoises observed ~~or handled~~: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within project areas shall be marked for future identification as described in *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1999) or more current guidance on the USFWS website. Digital photographs of the carapace, plastron, and fourth costal scute shall be taken. Scutes shall not be notched for identification. Any desert tortoises observed within the project area or adjacent habitat shall be reported to the USFWS, CDFG, and CPM by written and electronic correspondence within 24 hours.

Verification: ~~No less than 60 days prior to start of any site mobilization or disturbance activities, the applicant shall submit to Energy Commission Staff, USFWS and CDFG a draft Desert~~

~~Tortoise Translocation Plan. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of a Translocation Plan that has been approved by Energy Commission staff in consultation with USFWS and CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Desert Tortoise Translocation Plan must be made only after approval by the Energy Commission staff in consultation with USFWS and CDFG. The project owner shall notify the CPM no fewer than 5 working days before implementing any CPM-approved modifications to the Translocation Plan.~~

~~Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Translocation Plan have been completed, and a summary of all modifications to measures made during implementation.~~

Within 30 days of completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to the CPM, USFWS, and CDFG describing how each of the mitigation measures described above has been satisfied. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises, and any other information needed to demonstrate compliance with the measures described above.

C. Raven Fee, Monitoring, Management, And Control Plan

In the Applicant's comments on the PSA (Exhibit 106) regarding proposed Condition of Certification BIO-14, Applicant requested that the regional raven management plan funding requirements be deleted for reasons similar to the ones stated above for BIO-13. While Staff did not directly respond to this request in the FSA Response to Public and Agency Comments, BIO-14 was only modified to make the funding contribution more explicit as to the amount and specific fund. Applicant's position remains that no in-lieu fee for the REAT Regional Raven Management Program is reasonable for the PHPP plant site for several reasons:

1. In two years of surveys no tortoise sign was observed on the plant site or buffer. It is likely that few to no tortoises remain in the relict habitat in the broader plant site vicinity due to the types and extent of the area's development, which would result in intensive direct and indirect impacts to tortoises. Even if occupied, this remaining habitat is entirely isolated from occupied tortoise habitat by extensive development, so it is of no value to species persistence and recovery. If ravens were to occur on the plant site, they would not affect the species in a meaningful way, either because no tortoises are likely on the plant site and vicinity or because predation, even if it were to occur, would occur

in a segment of the population that cannot currently contribute to species persistence and ultimately will be extirpated by impacts unrelated to the PHPP.

2. There are many developments in the project vicinity that are far more attractive to ravens than the PHPP, especially in light of the project's raven control program, which would eliminate and/or minimize potential raven subsidies associated with the plant site. Increases in raven populations at the plant site due to project activities therefore are highly unlikely.

3. While occupied tortoise habitat has been documented approximately 16 miles from the plant site, and ravens have been documented to forage as far as means of 16.8 miles (Mahringer 1970 in Boarman and Heinrich 1999), typical foraging distances from a roost are much shorter, 3.9 mi (Kristan and Boarman 2003). Flight distances from roosts to food sources are highly variable and influenced by resource abundance and availability, population densities, breeding state and age, geographic location and elevation, local genotypes, and individuality. Most studies have focused on landfill associations, which are a much more attractive food resource than open desert, so flight distances to landfills from a roosting location may not be meaningful.

While the Applicant believes that a raven management fee should not be required for PHPP, there is a low likelihood that ravens could occur along portions of Segment 1 of the Applicant's proposed transmission line route. Therefore, Applicant is willing to pay a fee based on the acreage disturbed by construction of the transmission line. Compensation for the entire transmission line is generous, since not all of the transmission line represents tortoise habitat or is adjacent to tortoise habitat.

Note, FSA Alternatives Appendix A provides a set of Conditions of Certification that would apply in the case of other optional transmission line route(s) being selected by the Applicant. All comments provided in this document with respect to biological resources would apply to these conditions for Alternate Route 5 and the Partial Underground Alternate as well. In the case of BIO-14 under these two Alternatives, since the transmission line would not be routed to the east, no funding for raven management should be required.

Literature Cited:

Boarman, W. I., and B. Heinrich. 1999. Common Raven (*Corvus corax*). *In* The Birds of North America, No. 476 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Hagen, M. 2008. Personal communication with AMEC Wildlife Biologist Matt Amalong.

Kristan, W. B. III and W. I Boarman. 2003. Spatial pattern of risk of common raven predation on desert tortoises. Ecology 84(9):2432-2443.

Mahringer, E. B.. 1970. The population dynamics of the Common Raven (*Corvus corax*) on the Baraga Plains L'Anse, Michigan. M.S. thesis., Michigan Tech. Univ., Houghton.

BIO-14 The project owner shall design and implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that is consistent with the most current USFWS-approved raven

management guidelines and that meets the approval of the USFWS, CDFG, and the CPM. Any subsequent modifications to the approved Raven Plan shall be made only with approval of the CPM in consultation with USFWS and CDFG. The Raven Plan shall include but not be limited to a program to monitor increased raven presence in the Project vicinity and to implement raven control measures as needed based on that monitoring. The purpose of the plan is to avoid any Project-related increases in raven numbers during construction, operation, and decommissioning. The threshold for implementation of raven control measures shall be any increases in raven numbers from baseline conditions, as detected by monitoring to be proposed in the Raven Plan.

...

2. Contribute to the REAT Regional Raven Management Program. The project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the REAT Regional Raven Management Program. The amount shall be a one-time payment of $105 per acre (75.49 ~~458.5~~ acres) of permanent disturbance fee $ 7,926.45 ~~48,142.50~~.

D. Swainson's Hawk Habitat Compensatory Mitigation

Applicant provided comments on the PSA (Exhibit 106) regarding proposed Condition of Certification BIO-17 on May 12, 2010. On May 13, 2010, guidance on mitigation for Swainson's hawk was released by CEC and CDFG. The FSA was revised to more closely conform to this guidance. However, the guidance simply states that compensation lands should be provided at a ratio of 2:1 for potential foraging habitat. In the FSA, Staff has included a requirement that the compensation lands be provided based on the types of native plant communities on the PHPP plant site. Applicant believes that specifying that the selected compensation land must have these exact proportions of plant communities, including 10.22 acres of agricultural lands, is unreasonable, infeasible and not supported by the guidance, and hence should not be required.

We appreciate that Staff has reconsidered the requirement for protocol surveys, and offers such surveys as an option should the Applicant choose to attempt to show absence of this species within five miles of PHPP components. However, our preliminary estimation is that these surveys over such a large distance and over multiple time periods would be extremely costly and may actually exceed the cost of providing the required compensation lands. Therefore, it is unlikely that the Applicant would choose this option under the current guidance.

BIO-17 The project owner shall either assume that Swainson's hawk nest within five miles of the project site and provide compensatory mitigation as described below or complete CFDG protocol surveys within five miles of project facilities that result in permanent impacts to Swainson's hawk foraging habitat.

If surveys are completed they shall include the following components.

...

Regardless of the estimates, the project owner is responsible for providing adequate funding to implement the required mitigation. These impact acreages shall be adjusted to reflect the final project footprint. For purposes of this condition, the Project footprint means all lands disturbed in the construction and operation of the Palmdale Hybrid Power Plant Project Site and 10.22 acres of agricultural lands that occur on Segment 1.

This compensation acreage may be included ("nested") within the acreage acquired and managed as Mohave ground squirrel habitat compensation (Condition of Certification BIO-20) only if:

A minimum of 610 acres ~~of~~ composed of suitable foraging habitat, such as ~~including a minimum of 366.3 acres of~~ Joshua tree woodland, ~~233.1 acres of~~ Mojave creosote bush scrub and ~~10 acres of~~ agricultural lands, are present.

The Mohave ground squirrel habitat compensation lands are acquired and dedicated as permanent conservation lands within 18 months of the start of project construction.

...

E. Burrowing Owl Impact Avoidance, Minimization, And Compensation Measures

If occupied burrowing owl burrows on the Project site cannot be avoided, passive relocation on the Project site should be implemented, if feasible.

BIO-18 The project owner shall implement the following measures to avoid and offset impacts to burrowing owls:

...

3. Passive Relocation of Burrowing Owls. If pre-construction surveys indicate the presence of burrowing owls within the Project Disturbance Area (the Project Disturbance Area means all lands disturbed in the construction and operation of the PHPP Project), the Project owner shall prepare and implement a Burrowing Owl Relocation and Mitigation Plan, in addition to the avoidance measures described above. The final Burrowing Owl

Relocation and Mitigation Plan shall be approved by the CPM, in consultation with USFWS and CDFG, and shall:

a. Identify and describe suitable relocation sites on the Project site or within 1 mile of the Project Disturbance Area, and describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or existing burrowing owl colonies in the relocation area;

...

4. Acquire Compensatory Mitigation Lands for Burrowing Owls. The following measures for compensatory mitigation shall apply only if burrowing owls are detected within the Project Disturbance Area. The Project owner shall acquire, in fee or in easement, 19.5 acres of land for each burrowing owl that is displaced by construction of the Project. This compensation acreage of 19.5 acres per single bird or pair of nesting owls assumes that there is no evidence that the compensation lands are occupied by burrowing owls. If burrowing owls are observed to occupy the compensation lands, then only 9.75 acres per single bird or pair is required, per CDFG (1995) guidelines. If the compensation lands are contiguous to currently occupied habitat, then the replacement ratio will be 13.0 acres per pair or single bird. The Project owner shall provide funding for the enhancement and long-term management of these compensation lands. The acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described in Section 3.i. of Condition of Certification BIO-20.

a. Criteria for Burrowing Owl Mitigation Lands. The terms and conditions of this acquisition or easement shall be as described in Paragraph 1 of BIO-20 [Mohave ground squirrel Compensatory Mitigation], with the additional criteria to include: 1) the mitigation land must provide suitable habitat for burrowing owls, and 2) the acquisition lands must either currently support burrowing owls or be within dispersal distance of areas occupied

by burrowing owls ~~from an active burrowing owl nesting territory~~ (generally approximately 5 miles). The burrowing owl mitigation lands may be included with the Mohave ground squirrel mitigation lands ONLY if these two burrowing owl criteria are met. If the burrowing owl mitigation land is separate from the acquisition required for Mohave ground squirrel compensation lands, the Project owner shall fulfill the requirements described below in this condition.

...

F. Avian And Bat Protection Plan / Monitoring Bird And Bat Impacts From Solar Technology

The PSA did not contain a requirement for an Avian and Bat Protection Plan, and BIO-24 is a new requirement that has been added to the FSA based on recent USFWS guidance. Applicant has suggested that some of the descriptive language of what needs to be in the plan be deleted. The proposed Condition already requires that study design must be approved by resource agencies and the CEC. Therefore, it is requested that specific studies not be referenced and instead this level of detail be left for the plan review process.

BIO-24 The project owner shall prepare and implement an Avian and Bat Protection Plan to monitor bird and bat collisions with facility features (study described below). The Project owner shall use the monitoring data to inform and develop an adaptive management program that would avoid and minimize Project-related avian and bat impacts. Project-related bird and bat deaths or injuries shall be reported to the CPM, CDFG and USFWS. The CPM, in consultation with CDFG and USFWS, shall determine if the Project-related bird or bat deaths or injuries warrant implementation of adaptive management measures contained in the Avian and Bat Protection Plan. The study design for the Avian and Bat Protection Plan shall be approved by the CPM in consultation with CDFG and USFWS, and, once approved, shall be incorporated into the project's BRMIMP and implemented. The Plan shall include adaptive management strategies that include the placement of bird flight diverters, aerial markers, or other strategies to minimize collisions with the solar arrays.

The Avian and Bat Protection Plan shall include a Bird and Bat Monitoring Study to monitor the death and injury of birds from collisions with facility features such as reflective mirror-like surfaces. The study design shall be approved by the CPM in consultation with CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented. ~~The Bird Monitoring Study shall be based upon prior studies by McCrary et al. (1986) or other applicable literature, and shall include detailed~~

~~specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias and proposed disposition of dead or injured birds.~~

...

G. Closure Plan Measures

It is unreasonable to provide the funding prior to the start of construction since the Applicant will not know what the specific decommissioning measures will be or what they will cost prior to initiating ground disturbing activities. The Biological Resources Element, which addresses biological resources-related issues associated with facility closure, is not due until 12 months prior to commencement of planned closure activities. The financial assurances would be provided at that time.

BIO-25 The project owner shall implement and incorporate into the facility closure plan measures to address the local biological resources related to facility closure. A funding mechanism shall be developed in consultation with the Energy Commission staff to ensure sufficient funds are available for revegetation, reclamation, and decommissioning if the project site will not be re-powered or developed. The facility closure plan shall address biological resources-related mitigation measures. In addition to these measures, the plan shall include the following:

1. Removal of transmission conductors when they are no longer used and useful;

2. Removal of all above-ground and subsurface power plant site facilities and related facilities;

3. Methods for restoring wildlife habitat and promoting the re-establishment of native plant and wildlife species;

4. Revegetation of the project site and other disturbed areas utilizing appropriate methods for establishing native vegetation if the site will not be repowered or developed; and

5. A cost estimate to complete closure-related activities.

In addition, the project owner shall secure funding to ensure implementation of the plan and provide to the CPM written evidence of the dedicated funding mechanism(s).

Verification: ~~Prior to initiating ground-disturbing project activities, the project owner shall provide financial assurances to~~

~~the CPM to guarantee that an adequate level of funding will be available to implement decommissioning and closure activities described above. The financial assurances may be in the form of an irrevocable letter of credit, a performance bond, a pledged savings account, or another equivalent form of security, as approved by the CPM.~~

At least 12 months prior to commencement of planned closure activities, the project owner shall address all biological resources-related issues associated with facility closure, and provide final measures, in a Biological Resources Element. The draft planned permanent or unplanned closure measures shall be submitted to the CPM for comment by staff, CDFG, and USFWS. After revision, final measures shall comprise the Biological Resources Element, which shall include the items listed above as well as written evidence of the dedicated funding mechanism(s) for these measures. The final Biological Resources Element shall become part of the facility closure plan, which is submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan (see Compliance Conditions of Certification).

Upon facility closure, the project owner shall implement measures in the Biological Resources Element and provide written status updates on all closure activities to the CPM at a frequency determined by the CPM.

V. GEOLOGY & PALEONTOLOGY

A. PAL-4

The Applicant submitted comments on PAL-4 on February 8, 2010 (Exhibit 99) and discussed the requested changes at the PSA Workshop. PAL-4 requires having to produce a video for CPM approval prior to the start of training, since often the video is filmed during the initial training exercise. Instead, the Applicant seeks to have the script and/or training materials approved in advance, but not the actual video. Similar modifications were accepted for the Beacon Solar Energy Project (08-AFC-2). The Applicant proposes the following revised version.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and condzauct weekly CPM-

approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of ~~a CPM-approved video or in-person presentation~~ training based on a CPM-approved video script or other presentation materials. Following initial training, a CPM-approved video, other approved training presentation, or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

...

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

At least 30 days prior to ground disturbance, the project owner shall submit the training program presentation/materials ~~script and final video~~ to the CPM for approval if the project owner is planning to use a presentation format other than a video for ~~a video~~ for interim-training or a script if a video is to be used for training.

If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or other approved presentation format ~~video~~) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

VI. HAZARDOUS MATERIALS

1. HAZ-2

Subsequent to the PSA, Condition HAZ-2 has been modified to require the preparation of a Process Safety Management (PSM) Plan for the HTF system based on the belief that HTF is "highly

flammable" (ref. pages 4.4-9, 4.4-19). According to the OSHA PSM regulations, 29 CFR 1910.119 (which cross-references 1910.1200(c)), a flammable liquid is "any liquid having a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture". According to the MSDS for Therminol VP-1®, the flash point of the material is 230°F (110°C). Because Therminol is not classified as a flammable liquid, PSM regulations do not apply to the facility for this material. There are no other materials planned for use at the facility that would exceed their applicable PSM threshold.

Staff's proposed HAZ-2 also now requires the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan. Pursuant to 40 Code of Federal Regulations §112.1(d)(1)(i), the SPCC regulations do not apply to "[A]ny onshore or offshore facility, that due to its location, could not reasonably be expected to have a discharge as described in paragraph (b) of this section. This determination must be based solely upon consideration of the geographical and location aspects of the facility (such as proximity to navigable waters or adjoining shorelines, land contour, drainage, etc.) and must exclude consideration of manmade features such as dikes, equipment or other structures, which may serve to restrain, hinder, contain, or otherwise prevent a discharge as described in paragraph (b) of this section." The PHPP facility is over 11 miles from the nearest navigable water. Based on this distance and the intervening topography, it is reasonable to conclude that a spill from the facility could not impact navigable waters. Accordingly, the Applicant requests that the requirement to prepare an SPCC Plan be deleted from the condition.

Consequently, the Applicant requests that HAZ-2 be modified to eliminate the PSM and SPCC requirements, as shown below.

> **HAZ-2** The project owner shall provide a Business Plan~~, a Spill Prevention, Control, and Countermeasure Plan (SPCC), a Process Safety Management Plan (PSMP)~~ and a Risk Management Plan (RMP) to the Health Hazardous Materials Division of the Los Angeles County Fire Department and the CPM for review. After receiving comments from the Health Hazardous Materials Division of the Los Angeles County Fire Department and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final plans shall then be provided to the Health Hazardous Materials Division of the Los Angeles County Fire Department for information and to the CPM for approval.
>
> **Verification:** At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval.
>
> At least thirty (30) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the CUPA for information and to the CPM for approval.

~~At least thirty (30) days prior to delivery of Therminol to the site, the project owner shall provide the final PSM Plan and SPCC Plan to the CUPA for information and to the CPM for approval.~~

B. HAZ-9

Applicant continues to believe that if a security guard is present on-site 24/7, that it is not necessary to have CCTV cameras or breach detectors around the power block as well as the solar field for such a relatively small (333 acre) facility that does not contain significant quantities of hazardous materials (e.g., aqueous ammonia) and no extremely hazardous materials. The intent of CFR Part 27 Interim Final Rules on power plant security is to protect the public against major releases of extremely hazardous materials.

In the alternative, if Staff continues to require CCTV cameras, in discussions between the City and U.S. Air Force Plant 42 (see Exhibit 106), it was determined that CCTV cameras should not be placed along the fences that border Plant 42 (e.g., along the southern and eastern perimeter fences of the plant site). The change that was made by the CEC to the FSA HAZ-9 condition, sub-item 10, adds a reference to CCTV cameras monitoring the northern and eastern borders of the plant site. If Staff continues to require CCTV cameras, Applicant requests the CCTVs should be limited only to the northern and western borders of the plant site and should not be placed along the eastern border (which is the border adjacent to Plant 42) in accordance with Plant 42 communications.

VII. POWER PLANT RELIABILITY

A. Page 5.4-5

Under "Water Supply Reliability" (top of Page 5.4-5) the FSA describes a "new 4,700 foot, 16-inch diameter recycled water pipeline" for cooling tower make-up from the PWRP. The recycled water pipeline is actually 7.4 miles long and 14 inches in diameter. It is the sanitary wastewater pipeline that is 4,700 feet long. but six inches in diameter.

The Applicant proposes the following revisions to Page 5.4-5:

> The PHPP will use recycled water from the City of Palmdale Water Reclamation Plant via a new ~~4,700-foot-long, 16-inch-diameter~~7.4 mile long, 14 inch diameter pipeline for cooling tower makeup and other industrial uses. There is a signed agreement between the applicant and the County of Los Angeles to provide the necessary quantities of water (COP 2010a). Therefore, staff believes the source of water supply represents a reliable source for the project. For further discussion of water supply, see the **SOIL AND WATER RESOURCES** section of this document.

VIII. TRAFFIC & TRANSPORTATION

A. TRANS-1

Applicant's requests the following revision to TRANS-1 to correct what Applicant believes

to be a typographical error limiting construction traffic to only the stated specific route. TRANS-1 further restricts the traffic such that it cannot use this route during peak hour traffic, which would make it infeasible for construction workers to access the site during peak travel periods. The traffic analysis in the AFC demonstrated that traffic could be routed on other roads where it would not cause significant impacts. The CPM can verify that the selected traffic control plan is consistent with the traffic analysis.

The Applicant proposes the following revisions:

TRANS-1 The project owner shall prepare and implement a construction traffic control plan. The traffic control plan must include but not be limited to the following issues:

- Prepare and distribute a map of the route for construction workers to use to access the proposed project site ~~(SR-14 to Avenue M to the PHPP site;~~

- Make improvements to East Avenue M (e.g. turn and acceleration/deceleration lanes) consistent with existing project access features to allow for safe arrival/departure to/from the project site;
- Limit heavy equipment and building materials deliveries to between 9:30 am and 3:30 pm, per Palmdale General Plan Circulation Element, to minimize impacts and route truck traffic around residential development;
- Provide signing, lighting, and traffic control device placement during construction impacting regional and local roadways;
- Ensure construction traffic avoids using the SR-14 on and off-ramps to East Avenue M and the intersection of Sierra Highway and East Avenue M during peak morning and afternoon traffic periods;
- Traffic diversion plans (in coordination with the cities of Palmdale and Lancaster) to ensure access during temporary lane/road closures;
- Ensure ~~of~~ access for emergency vehicles to the project site;
- Ensurance of pedestrian and bicycle safety from construction vehicle travel routes and any construction-related temporary travel lane closures or disruptions;
- Temporary closure of travel lanes or disruptions to street segments and intersections during reconductoring activities or any other utility tie- ins;
- Establish a parking plan for workers, construction vehicles, and trucks during transmission line and pipeline construction;
- Installation of the natural gas pipeline and water line to occur during nonpeak hours; and

- Use flagging, flag men, signage and cover open trenches when needed.

  Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a traffic control plan that outlines each component above to Caltrans and the cities of Palmdale and Lancaster Planning Departments for review and comment and to the CPM for review and approval. The proposed route for construction traffic shall be based on the traffic analyses prepared for the project or as approved by the CPM. The project owner shall provide the CPM with any comments from Caltrans and the cities of Palmdale and Lancaster.

B. TRANS-8

The FSA contains several new proposed conditions related to U.S. Air Force comments regarding the potential for glint and glare impacts that were not in the PSA. Rather than an overall rationale for the changes, the rationale is provided before each change below.

> **TRANS-8** Prior to the start of construction, the project owner shall provide a plan to the CPM and the Air Force Plant 42 Commander identifying all reasonable measures the project owner will take to minimize the creation of glint and glare on Air Force Plant 42 airfield traffic including, but not limited to, the following:
>
> Ensure the mirrors are (1) brought out of stowage before sunrise and are aligned to catch the first rays of the morning sun; and (2) returned to stow position after sunset.

Operating mirrors have a heat transfer fluid operating at high temperature within a heat transfer tube. It would be a safety hazard to immediately enclose a malfunctioning mirror in a cover once a mirror malfunctioned because the hot HTF would continue to flow through the tube of the malfunctioning mirror. The subsequent buildup of heat beneath the cover would pose a fire hazard and the action of covering a malfunctioning mirror in an operating mirror array would pose an unacceptable risk to workers of burns and eye injury from adjacent operating mirrors. The most prudent action is to rotate the mirrors off-axis to the east away from the sun.

The Applicant proposes the following revisions:

1. Ensure mirrors are continuously monitored for malfunctions and remain properly aligned with the sun. Acquire appropriate equipment and establish procedures to ~~cover inoperative or malfunctioning mirrors immediately after malfunctions are discovered to prevent~~ minimize the escape of errant reflections from malfunctioning mirrors by rotating the mirrors off-axis to the east away from the sun as soon as practicable during times of day that could be problematic.

2. Minimize reflections from bellows shields by using a non-reflective or diffuse material or coating (for example, paint) for the shields.

During specific configurations/time of day, glint from the solar field is momentary but unavoidable. What needs to be minimized is the creation of enhanced glint due to mirror malfunctions and purposeful off-axis movements. In addition, all landing and takeoff operations are critical flight operations. The condition as written could be read as requiring nearly continuous notification to the control tower of mirror movement and operational activities whenever an aircraft is in the traffic pattern or is preparing for takeoff. The communication between the PHPP operator and the control tower should be used primarily to notify the control tower of significant operating conditions that may pose an enhanced risk for glint during landing and take-off flight operations. Anything else will produce an undue burden for the control tower staff and distract them from their primary duties.

The Applicant proposes the following revisions:

3. Ensure PHPP operator establishes and maintains a communication link with Air Force Plant 42 control tower to ~~ensure that when necessary mirrors are positioned so as not to interfere with critical flight operations~~ allow the control tower to be notified of significant operational issues that have the potential to enhance the risk from glint to aircraft during landing and takeoff operations.

4. Establish procedures to avoid glare when intentionally moving individual collectors off-axis to "dump" power incident on the heat collection elements during periods of high insolation.

The risk of glare from a given mirror depends not on distance from the runway and landing pattern but rather on the time of day (i.e., sun elevation), day of year (i.e., solar azimuth), aircraft altitude and bearing from the mirror (i.e., sun-mirror-aircraft geometry), and the runway in use (i.e., how that geometry is changing). Thus, a simple condition to rotate the farthest northwest mirrors first does not improve safety and could impair the ability of the plant operator to move the mirror producing the greatest potential hazard first. In addition, the desired direction of movement of the mirror should always be to the east, away from the sun. A mandatory movement of the mirror to the west has the potential for allowing the sun's movement to catch up with the mirror and produce an on-axis mirror later in the day. Glare from a mirror will only occur during the day when the sun is above the horizon so nighttime mirror malfunctions have no potential to produce glint and glare unless the malfunction extends into the next day. An example of daytime mirror malfunction that is not significant and should not require notification is a stowed mirror that cannot move. Such a mirror cannot produce a glare that could interfere with flight operations and is an operational problem only.

The Applicant proposes the following revisions:

If the plant operator needs to dump power and rotate several modules off-axis, the Operator will develop a plan to ensure the safe movement of the modules to the east. The rotation should be coordinated with the Air Force Plant 42 control tower to ensure that the movement does not affect aircraft currently in the flight traffic pattern. ~~the operator shall start with the modules at the north-most and west-most parts of the collector field, which is furthest from~~

~~the Air Force Plant 42 to the southeast. For each module that is rotated off-axis, the operator shall consider the nearest flight pattern; if it is to the east, then the module shall be rotated to the west, and vice-versa. This rotating shall be done in a manner that minimizes the impact of glare on aircraft (for example, rotating modules furthest from the airport in a direction that is away from flight patterns).~~

In addition, this plan shall include specific provisions for tracking and compiling data involving ~~any and all~~ significant daytime mirror malfunctions that have the potential to enhance the potential for glare to occur from the mirrors. This data shall include the (1) date, time and location of offending mirror or mirrors; (2) specific adjustments made to correct each mirror or mirrors; (3) date and time specific adjustments were evaluated for effectiveness; and (4) effectiveness of each adjustment. That information shall be included in the monthly compliance reports during construction and in the semi-annual compliance reports during operation. This information will be used to ensure that the offending mirrors are quickly adjusted, thereby having a minimum impact on flight operations. In addition, this information will provide data for the plant operator to use in monitoring mirror operations and preventing malfunctions.

C. TRANS-9

Notifying the Commander and initiating corrective actions within 24 hours establishes a reasonable timeframe, however, the ordering and replacing or repairing of broken mirror tracking motors, drive gears, or other components could take much longer.

The Applicant proposes the following revisions:

TRANS-9 Throughout the construction and operation of the project, the project owner shall work with the Air Force Plant 42 Commander or his or her designated representative to develop and implement a process for documenting, investigating, evaluating, and resolving all project-related glare complaints.

The project owner or authorized agent shall:

...

3. If glint or glare is project-related, project owner shall take all feasible measures to reduce glint and glare at its source within 24 hours, or will notify the Commander as soon as possible when such measures can be completed.

IX. TRANSMISSION LINE SAFETY & NUISANCE

A. TLSN-4

Condition TSLN-4 requires the project owner to ensure the transmission line right of way is kept free of combustible material, etc. The ownership as well as operation and maintenance of all or portions of the transmission line may be transferred to SCE or another transmission system operator, this requirement should be the responsibility of the owner of the line, not the Applicant.

The Applicant proposes the following revisions:

> **TLSN-4** The project owner shall ensure that the rights-of-way of those portions of the transmission line that are under the Project owner's control are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations."

X. VISUAL RESOURCES

A. VIS-2

VIS-2 requires four additional simulations (one for each KOP) with as-built facility materials and colors, regardless of whether there has been a substantive change from the simulations previously provided. This requirement would be costly. Applicant requests that Applicant provide samples of materials and colors for review along with completed AFC simulations.

The Applicant proposes the following revisions:

> **VIS-2 – (E)** In the event that color treatments or textures differ substantially from what was proposed by the Applicant in the AFC or in subsequent submittals, o~~O~~ne set of 11" x 17" color photo simulations at life size scale of the proposed treatment for project structures, including structures treated during manufacture, from the Key Observation Points;

XI. WASTE MATERIALS

A. WASTE-2:

This condition requires that sampling and analysis be consistent with the DTSC's "Interim Guidance for Sampling Agricultural Fields for School Sites" or equivalent. The Applicant believes this guidance document is not directly applicable to the PHPP transmission line route because most of the transmission corridor lands are unoccupied. The guidance is intended for school locations, not properties with no occupancy (such as the transmission lines and lay down areas). The Applicant proposes that a professional engineer or professional geologist prepare an appropriate sampling and analysis plan in accordance with industry norms for unoccupied sites.

The Applicant proposes the following revisions:

> **WASTE-2** In areas where the land has been or is currently being farmed, and where excavation or significant ground disturbance will occur for the construction of the project transmission line, soil samples shall be collected and tested for herbicides, pesticides, and fumigants to determine the presence and extent of any material levels of contamination.
>
> The sampling and testing plan shall be prepared in consultation with the appropriate Los Angeles County agency, conducted by an appropriate California licensed professional, and sent to a California Certified laboratory for testing. Sampling and analysis shall be consistent with ~~the DTSC's 'Interim Guidance for Sampling Agricultural Fields for School Sites (Third Revision)' or equivalent~~ industry norms for sites having no occupancy. A report documenting the areas proposed for sampling, and the process used for sampling and testing shall be submitted to the Energy Commission for review and approval at least 90 days before transmission line construction occurs in the affected areas.

DATED: January 12, 2011

Respectfully submitted,

Michael J. Carroll
LATHAM & WATKINS LLP
Counsel to Applicant

APPENDIX B
APPLICANT WITNESS QUALIFICATIONS

WSA

James M. Allan, Ph.D. — WSA Principal

EDUCATION

2002 Ph.D. Anthropology, University of California, Berkeley.
1990 MA. Anthropology, University of California, Berkeley.
1989 MA. Maritime History and Underwater Archaeology, East Carolina University.
1970 BS. Business Administration, St. Mary's College, Moraga, California.

EXPERIENCE:

1993 - Present: *Vice President/Principal, Principal Investigator, William Self Associates.*

As Principal Investigator, responsibilities include supervision of 30 technical staff in cultural resource management studies including: prehistoric, historic, and maritime archeological field survey, archival research, testing and data recovery, artifact cataloging and lab analysis, architectural history and architectural documentation, and state and federal historic preservation consultation. Recent Principal Investigator experience includes:

- Transbay Transit Center, San Francisco, CA. Responsible for strategic planning for cultural resources, budget preparation, project management, staffing, coordination with Transbay Joint Powers Authority, the developer and signatories to project's MOA.

- Vistacion Valley/Schlage Lock Development, San Francisco, CA. Responsible for budget preparation and project management, staffing, SFERO and client coordination, direction of technical studies, data recovery, monitoring and report preparation.

- 300 Spear Street Project, San Francisco, CA. Responsible for budget preparation and management, staffing, SFERO and client coordination, direction of technical studies, data recovery (including the recovery of a 19th century whaling ship) and report preparation.

- Palmdale Hybrid Power Project. Directed project surveys and investigations, preparation of technical studies and reports; responsible for budget preparation and management, staffing, client coordination. Coordinated with CEC on responses to data requests.

- Victorville-2 Hybrid Power Project. Directed project surveys and investigations, preparation of technical studies and reports; responsible for budget preparation and management, staffing, client coordination. Coordinated with CEC on responses to data requests.

- Tucson Pipeline Replacement Project, involving coordination with numerous state agencies and tribes. Pipe project crossed several significant archaeological sites, including Tumamoc Hill, a National Historic Landmark site and Native American Traditional Cultural Property. Coordinated survey, site recoding and assessment, data recovery, and reporting.

- City of Oakley Cypress Corridor Project. Responsible for budget preparation and management, staffing, agency and client coordination, direction of technical studies, and report preparation for City of Oakley's annexation of approximately 2,600 acres.

- Kinder Morgan Energy Partners Bay District Archaeological Survey and Sensitivity Project. Responsible for designing and implementing archaeological survey and analysis of sensitivity of 300 mile gas pipeline system.

- Water Transit Authority Oyster Point Ferry Terminal. Responsible for budget preparation and management, staffing, agency and client coordination, direction of technical studies, and report preparation.

- Carquinez Straits Bridge Replacement and Seismic Retrofit Project. Responsible for design and implementation of maritime archaeological research associated with replacement and seismic retrofit of the Carquinez and Benicia bridges. Project included archival research, remote sensing (side scan sonar, sub-bottom profile, remote ground-truthing), underwater ground truthing and data recovery, and interpretation.

- San Rafael Bridge Seismic Retrofit Project. Responsible for design and implementation of maritime archaeological research associated with seismic retrofit of the San Rafael Bridge. Project included archival research, remote sensing (side scan sonar, sub-bottom profile, remote ground-truthing), underwater ground truthing and data recovery, and interpretation.

- San Francisco-Oakland Bay Bridge East Span Replacement Project. Responsible for design and implementation of maritime archaeological research associated with SFOBB replacement project. Project included archival research, remote sensing (side scan sonar, sub-bottom profile, remote ground-truthing), underwater ground truthing and data recovery, and interpretation.

- Four Seasons Hotel Project, San Francisco - Archaeological testing, construction monitoring, and data recovery for 32-story hotel, residential, commercial complex, Market Street, San Francisco.

- Marine Archaeological Survey of the Proposed Southhampton Shoal Ship Channel. Consulted on remote sensing data collection, interpreted findings and prepared archaeological section of project's final report

- Marine archaeological survey of portions of the J. Baldwin Ship Channel. Consulted on remote sensing data collection, interpreted findings and prepared archaeological section of project's final report.

- Muni Metro Turnback Project. Responsible for technical direction and administration on multi-year, $250M construction project in San Francisco requiring archeological monitoring, artifact retrieval and data recovery through 19th Century historic fill and maritime (vessel) remains. Directed activities of multiple archeological monitors, responsible for artifact analysis and reporting, agency consultation.

- San Francisco Muni Railway Mid-Embarcadero Roadway/F-Line Extension Project. Responsible for archaeological testing, construction monitoring, data recovery for renovation and realignment of Embarcadero roadway from Folsom Street to Broadway, San Francisco.

- One Embarcadero South Project. Responsible for excavation, documentation, and interpretation of structural remains of Tichenor's Ways, earliest marine railway in California.

- 1045 Mission Street. Responsible for archaeological testing, construction monitoring, and data recovery for multi-story residential complex in South of Market area, San Francisco, California.

2005 – Present: *Member, National Park Service Historical Landmarks Committee*

1999 - Present: *Research Fellow, Archaeological Research Facility, University of California, Berkeley*

1997 – Present: *Adjunct Professor, Department of Anthropology and Sociology, Saint Mary's College of California*

1990 – Present: *Director, Institute for Western Maritime Archaeology, Archaeological Research Facility, University of California, Berkeley.*

SELECT PUBLICATIONS

- Principal author: *Archaeological Documentation of Two Submerged Obstructions in Clipper Cove, San Francisco, California*. Prepared for the City and County of San Francisco on behalf of Treasure Island Enterprises

- Principal author: *Report on the Documentation and Assessment of Four Obstructions to Navigation in the Sacramento River, Sacramento and Yolo Counties, California.* Prepared for the California State Lands Commission, Sacramento, California.

- Principal author: *Evaluation of Navigation Hazards in the Sacramento River, Sacramento and Yolo Counties*. Prepared for the California State Lands Commission.

- Principal author: *Report of Archival and Historic Literature Research on Select Obstructions to Navigation in the Sacramento River, Sacramento and Yolo Counties, California.* Prepared for the California State Lands Commission.

- Principal Author: Preliminary Report of the Maritime Archaeology Study for the San Francisco Bay Rocks Removal Project. Prepared for Sea Surveyor, Inc., Benicia, CA.

- Principal author: Archaeological Testing and Monitoring Program. Mid-Embarcadero Surface Roadway and F-Line Extension Project. Final Report. Prepared for Don Todd Associates, San Francisco, California.

- Principal author: Carquinez Straits Project, Maritime Archaeology. Report of Two Remnant Wharf Features East of the Benicia-Martinez Bridge. Prepared for the California Department of Transportation District 4, Oakland, California.

- Principal author: Carquinez Replacement Bridge Project. Report of Potential Construction Impediments Observed in the Maritime Archaeology Remote Sensing Survey and Ground Truthing Operations. Prepared for the California Department of Transportation District 4, Oakland, California.

- Principal author; San Francisco-Oakland Bay Bridge East Span Seismic Safety Project Addendum Archaeological Survey Report – Maritime Archaeology. Prepared for the California Department of Transportation District 4, Oakland, California

- Principal author; 1045 Mission Street Apartment Project, Archaeological Testing, Monitoring, and Data Recovery Report. Prepared for Emerald Fund, San Francisco, California.

  Principal author; Historic Archaeology of Tichenor's Ways, A Mid-19th Century Marine Railway and Drydock. Prepared for U.S. Department of Housing and Urban Development.

- Principal author; Archaeological Monitoring and Data Recovery Report. One Embarcadero South Project. Prepared for Urban West Associates, San Diego, California.

- Principal author; Archaeological Remote Sensing Survey and Ground Truthing Assessment. San Francisco-Oakland Bay Bridge East Span Seismic Safety Project. Pile Installation Demonstration Project Area of Potential Effect. Prepared for Parsons Brinckerhoff, San Francisco, California.

- Principal author; Yerba Buena Tower Project: Archaeological Testing, Data Recovery, and Monitoring Report. Prepared for Millennium Partners, San Francisco, California.

PRESENTED PAPERS AND LECTURES

- *"...so many ghastly piles of marine debris"*: Discovery of the whaling ship *Candace* in downtown San Francisco. Paper presented at 40th Annual Meeting of the Society for California Archaeology, Ventura, CA. 2006

- Systematic Surveying in Piecemeal Fashion: Tales of Research in San Francisco Bay. Paper presented at the 36th Conference on Historical and Underwater Archaeology, Kingston, Rhode Island, 2003.

- The Elusive *Il'men* -- Searching for one of California's Earliest Known Shipwrecks. Paper presented at the 26th annual conference of the North American Society for Oceanic History, Honolulu Hawaii, 2002.

- Archaeology as Prologue. Paper presented at the 34th Conference on Historical and Underwater Archaeology, Long Beach, CA; 2001.

- Tichenor's Ways: A 19th Century Shipyard in Downtown San Francisco. Paper presented at the 32rd Conference on Historical and Underwater Archaeology, Quebec, Canada 2000.

- An Archaeological Investigation of the Fort Ross Industrial Complex and Shipyard. Paper presented at the 32nd Conference on Historical and Underwater Archaeology, Salt Lake City, Utah; 1999.

- Forge and Falseworks: Preliminary Investigations of the Ross Colony's Industrial Complex. Paper presented at the 33rd Annual Meeting of the Society for California Archaeology, Sacramento, California; 1999.

- Russian Shipbuilding in Spanish California. Paper presented at the Annual Meeting of the North American Society for Oceanic History, San Diego, California; 1998.

- Investigating the Russian Shipbuilding Enterprise in Spanish California. Paper presented at the 32nd Annual Meeting of the Society for California Archaeology, San Diego, California; 1998.

- Sheep in the Tunnel: A Gold Rush-Era Ship Beneath Your Feet. Paper presented at the 31st Annual Meeting of the Society for California Archaeology, Rohnert Park, California; 1997.

- What Have We Here? The Rediscovery of Nelson's Mound 259. Paper presented at the 31st Annual Meeting of the Society for California Archaeology, Rohnert Park, California; 1997.

- *Ringleader* and *Sagamore*: A Report on the Tentative Identification of Two Nineteenth-Century Shipwrecks in San Pablo Bay. Paper presented at the 31st Annual Meeting of the Society for California Archaeology, Rohnert Park, California; 1997.

- Ship in the Tunnel: A Time Capsule for the Gold Rush. Lecture presented to the San Francisco Historical Society, June 11, 1996.

- Searching for the *Il'men*: Preliminary Field Survey. Paper presented at the 29th Annual Meeting of the Society for California Archaeology, Eureka, California; 1995.

MEMBERSHIPS

Memberships:

- Institute for International Maritime Research

- North American Society for Oceanic History
- Society for Historical Archaeology
- Society of American Anthropologists
- Society for California Archaeology
- Member, National Park Service Historical Landmarks Committee
- Member, The Explorers Club

PROFESSIONAL REGISTRATION:

Register of Professional Archaeologists (RPA) Certification since 1999.

Matt Amalong

Wildlife Biologist

Professional summary

Ten years experience as a wildlife biologist/environmental consultant. Responsibilities have included: project management; preparation of FERC, BRAR, BRTR, EA, BA, EIR/EIS, CIA, AFC and CEQA Biological Resource Reports; preparation of scopes, schedules, and budgets; desktop surveys (CNDDB, internet, literature search, etc.); technical editing and report writing; proposed wind and solar energy facilities surveys (avian, wildlife, plant); monitoring of threatened and endangered species; wetland delineation projects; restoration projects; wind and solar energy projects; superfund site projects; coordinating and conducting field surveys (avian, herpetological, mammalian, vegetation); and construction monitoring.

Education

Graduate School, Biology/Ornithology, California State University, Long Beach, 2000 to 2003
B.S., Biology, Stetson University, DeLand, FL, 1999

Memberships/Affiliations

The Wildlife Society, Western Section
National Wind Coordinating Collaborative
The Desert Tortoise Council

Employment history

AMEC Earth & Environmental, Inc., Wildlife Biologist, Riverside, CA, 2007 to present
Tetra Tech EC, Inc., Associate Biologist, Santa Ana, CA, 2005 to 2007
Keane Biological Consulting, Project Biologist, Long Beach, CA, 2000 to 2005
LSA Associates, Inc., Assistant Biologist, Irvine, CA, 2005
CA Department of Fish and Game, Biological Monitor, Carlsbad, CA, 2004

Representative projects

Palmdale Hybrid Power Project, Inland Energy, Los Angeles County, CA
Coordinated and conducted biological surveys (rare plants, Desert Tortoise, Burrowing Owl, Swainson's Hawk, Arroyo Toad) for a 570-MW solar/natural gas hybrid power plant and its associated linear components (36-mile transmission line, 9-mile reclaimed water pipeline, 7-mile natural gas pipeline) in Palmdale, CA. Prepared the Biological Resources Technical Report (BRTR) and the Biological Resources section of the Application For Certification (AFC) for the California Energy Commission.

Wildlife Habitat Assessment, El Paso International Airport, El Paso County, TX
Analyzed Bird/Wildlife Aircraft Strike Hazard (BASH) point count data conducted at and in the vicinity of El Paso International Airport. Assisted with the Wildlife Habitat Assessment Report.

San Onofre Nuclear Generating Station Steam Generator Replacement Project, Southern California Edison, San Diego County, CA
SCE's Steam Generator Replacement Project transported and installed four replacement steam generators (RSGs) at the SONGS facility. SCE and their transport contractor, Emmert International, transported the four RSGs within operational guidelines of Marine Corps Base Camp Pendleton, Caltrans, State Parks, and other jurisdictional agencies. The first two RSGs were transported in 2008; the second two in 2010. Assessed sensitive areas along the transport route. Monitored sensitive habitats (beaches, foredunes, coastal sage scrub, vernal pools) and species (Western

Snowy Plover, California Least Tern, California Gnatcatcher, Fairy Shrimp), and ensured environmental compliance.

Tehachapi Renewable Transmission Project, Southern California Edison, southern CA
Coordinated and conducted biological surveys along approximately 140 miles of high-voltage transmission line right-of-way (ROW) in the San Gabriel Valley, Angeles National Forest, and east slope of the San Gabriel Mountains. The project includes the tear-down and rebuild of transmission lines primarily within existing ROWs. Surveys included habitat assessments and focused surveys for Burrowing Owls, nesting birds, and other special-status species. Worked closely with SCE and USFS biologists to implement project while minimizing effects on adjacent biological resources. Prepared BE/BA for portion of project traversing the Angeles National Forest.

Wind Assessment Projects, Oak Creek Energy Systems Inc., southern CA and southern NV
Coordinated cultural and biological field surveys for three-year renewable wind prospecting BLM right-of-way grants for the installation of meteorological towers at five project sites in southern CA (San Bernardino and Kern Counties) and southern NV (Clark County). Conducted surveys for rare plants, Desert Tortoise, Burrowing Owl, and other sensitive species. Prepared Biological Resource Assessment Reports to support EA documents.

Revised Commercial WECS 20 Permit Project, Energy Unlimited Inc., Riverside County, CA
Provided biological support and prepared DEIR Response to Comments for a Repower Project in Desert Hot Springs, CA. The proposed Project will install eight new GE 1.5 MW wind turbine generators, remove sixteen existing smaller Bonus 65 kW wind turbine generators, construct a single-story storage building, and expand an existing outdoor storage area within the existing WECS 20 Wind Park.

RES Energy, Granite Mountain Wind Project, San Bernardino County, CA
Prepared biological study plan. Coordinated and conducted bi-weekly avian point-count surveys for proposed 46 MW Granite Mountain Wind Project in San Bernardino County. Analyzed avian point-count data and prepared mean use report providing results of those surveys. Identified species at risk by visual and aural observations. RES proposes to develop a new wind energy generation facility. This facility will include access roads, underground electrical lines, underground communication lines, concrete wind turbine foundations, tubular steel towers, 2.3-megawatt wind turbines, transformers, a communications system, and undisturbed open space. Project work required for preparation of an EIR for submission to the Bureau of Land Management (Barstow Field Office).

Field Surveys and EIR, Dillon Wind, LLC, Riverside County, CA
Coordinated and conducted field surveys for special-status species, including Desert Tortoise, Flat-tailed Horned Lizard, and Burrowing Owl. Wrote General Biological Assessment for County of Riverside and Biological Resources Technical Appendix for EIR. Dillon Wind, LLC is proposing to construct and operate an approximately 45 megawatt (MW) wind energy conversion system (WECS) project in the San Gorgonio Pass area of Riverside County. The Project will involve the installation of supporting facilities including on-site access roads, pad mount transformers, underground electrical transmission, and communication lines.

Valley-Auld-Pauba Transmission Project, Southern California Edison, Riverside County, CA
Conducted Burrowing Owl habitat assessment and focused surveys for a 12-mile rebuild project of 115-kV transmission lines designed to improve reliability and meet projected electrical load requirements.

Chino Substation, Southern California Edison, San Bernardino County, CA
Conducted a Burrowing Owl habitat assessment and focused surveys for a parcel of land adjacent to the SCE Chino Substation in Chino, San Bernardino County, California. Proposed construction in the

project area includes grubbing, removing trees, leveling and spreading soil evenly across the site, and weeding and clearing dead vegetation along the fence-line.

Holland CFD, Albert A. Webb Associates, Riverside County, CA
Conducted a habitat assessment of the potentially significant effects on river/riparian areas, wetlands, vernal pools, sage scrub, jurisdictional waters, narrow endemic plant species, Burrowing Owls, and oak trees potentially occurring. The proposed project includes road improvements and installing reclaimed water lines, sewer lines, and storm drains. Prepared Habitat Assessment Report.

Otay Mesa Border Patrol Tunnel Task Force, GSRC, San Diego County, CA
Conducted Burrowing Owl habitat assessment and monitoring during the filling of a tunnel used for illegal smuggling at the U.S.-Mexico border.

Common Raven Study, Edwards Air Force Base, Lancaster, CA
Developed and implemented a monitoring program to provide information on the population and behavior of Common Ravens and their interaction with Desert Tortoise within the Desert Tortoise Critical Habitat Area (DTCHA) on Edwards Air Force Base (EAFB). Factors investigated included Raven population densities, movement patterns, and diet characteristics. These three primary factors were evaluated both inside and outside the boundaries of the DTCHA and EAFB. Additional information collected included Raven nesting locations and staging areas. The study was also intended to establish point count locations where long-term comparative data can be collected to measure the status and impact of Raven populations within and adjacent to the DTCHA. Wrote biological report for Army Corps of Engineers.

Tule Wind Project, PPM Energy, San Diego County, CA
Prepared biological study plan. Coordinated and conducted bi-weekly avian point-count surveys, surveys for rare plant species, and surveys for refining vegetation community maps for proposed 177 MW Tule Wind Project in eastern San Diego County. Identified species at risk by visual and aural observations. The primary components of the proposed project are approximately 118 1.5-MW capacity wind turbines with a hub height of approximately 80 meters, a rotor diameter of 77 meters, and a total height of approximately 118 meters. Electrical power generated by the wind turbines would be collected on-site by underground 34.5kV transmission lines and ultimately delivered to an existing substation in Boulevard, approximately 3 mi. south of the project site via an overhead 230kV transmission line. Project work is required for preparation of an EIR.

FPL Energy, LLC, Beverly and DeKalb & Lee Wind Resource Areas, IL
Wrote Environmental Critical Issues Analysis (CIA) Report for two proposed wind energy conversion facilities in Beverly and DeKalb & Lee Counties, Illinois. These reports evaluated current environmental conditions and potential impacts on sensitive biological and cultural resources within the Wind Resource Areas (WRA). It also evaluated applicable land uses, zoning, and identified the types of permits, plans, and approvals that would likely be required for project development. Current plans for the Beverly WRA include the installation of 126 tubular-steel, 80 meter tall, 1.5 megawatt (MW) GE turbines (approximately 190 MW). Current plans for the DeKalb & Lee WRA include the installation of 129 tubular-steel, 80 meter tall, 1.5 megawatt (MW) GE turbines (approximately 194 MW). Infrastructure to be constructed or installed in conjunction with the turbine arrays and associated substations include access routes and both buried and overhead transmission lines.

New & Alamo River Wetland Restoration Plan, Salton Sea Authority, Imperial County, CA
Coordinated and implemented reconnaissance-level habitat and biota surveys along the New and Alamo Rivers in Imperial County, CA. The primary goal of the proposed surveys were to identify those flora and fauna that are currently present at the undeveloped sites and to help predict those species that may be present in any future wetlands scenario. Wrote biological report to be incorporated as a chapter in the Master Plan for New and Alamo Rivers.

Mile High Ranch Wind Project, UPC Wind Energy, LLC, Hudspeth County, TX
Analyzed avian point-count data and prepared mean use report providing results of those surveys for proposed wind energy conversion facility on an approximately 44.5 km2 (11,000 acre) area of west-central Texas, approximately 50 km east of El Paso near the El Paso/Hudspeth County line. The proposed design includes GE 1.5 MW turbines, which have an 80-meter hub height and a rotor diameter of 77 meters, resulting in a rotor swept area (RSA) between 41.5 and 118.5 meters above ground level. Infrastructure to be constructed or installed in conjunction with the turbine array and associated substation includes access routes and transmission lines. The protocol for this analysis was similar to protocols used at the Condon, Maiden, Stateline, and Vansycle wind projects in Oregon and Washington, the Buffalo Ridge wind project in southwest Minnesota, and the Foote Creek Rim wind project in Wyoming.

Luke Air Force Base, Barry Goldwater Tactical Range, NV
Coordinated and conducted biological surveys for Sonoran Pronghorn Antelope. Utilized video camera surveillance to monitor wildlife activity at watering/revegetation plots. Included installation of cameras and DVR equipment.

All-American Canal Lining Project, Imperial County, CA
Prepared training and safety materials, including Worker's Environmental Education Program (WEEP) manual, special-status species identification cards, environmental signs, training documentation database, and stickers. Conducted avian surveys along right-of-way. The purpose of the AAC Lining Project is to conserve seepage lost from the unlined AAC. The conserved water is needed in the southern California coastal area to offset a projected water shortage of 1.2 million acre-feet that is expected by the year 2010. The proposed project has the potential to conserve about 67,700 acre-feet per year.

North Baja Natural Gas Pipeline, Pacific Gas and Electric, CA and AZ
Field compliance with NEPA, CEQA, FERC, and federal and state Endangered Species Acts for an 80-mile natural gas line extending from Ehrenberg, La Paz County, Arizona, through Riverside and Imperial Counties, California to an interconnection with Sempra International's proposed Gasoducto Bajanorte pipeline at the U.S./Mexico border west of Yuma, Arizona. Implemented field compliance with terms and conditions of formal consultation with the USFWS pursuant to Section 7 of the Endangered Species Act of 1973 (as amended) and CDFG 2081 Take Permit. Field executed desert restoration plan, field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Conducted surveys for rare plants, Desert Tortoise, Flat-tailed Horned Lizard, Burrowing Owl, Gila Woodpecker, Southwestern Willow Flycatcher, and nesting bird surveys in accordance with the MBTA. Additional responsibilities included instructing, implementing, and maintaining compliance with various mitigation measures outlined in numerous project approvals and permits.

North Baja Expansion Project, Imperial and Riverside County, CA
Prepared FERC Resource Report: Vegetation and Wildlife. The purpose of this report was to describe the existing fish, wildlife, and vegetation resources that would be affected directly and indirectly by the proposed North Baja Expansion (NBX) Project and to assess the potential impacts to these resources resulting from construction and operation of the proposed project. The report also identifies the mitigation measures that are proposed to reduce the impact to these resources. The proposed project consists of the following two components: the B-line, which is comprised of the North Baja Loop, the Blythe Lateral, and the SoCal Gas Lateral; and, the IID Lateral.

Imperial Valley Desert Restoration Project, Sempra Energy Resources
Compiled and edited the "As-built" baseline surveys and initial execution of Sempra's restoration plan, including tamarisk, a non-native invasive shrub/small tree, removal and off-site mitigation for impacts.

Avian Surveys, North Baja Pipeline Extension, AZ and CA
Compiled and edited focused avian survey reports for southwestern willow flycatcher and clapper rail.

Laguna Sur Sanitary Easement Natural Resources Evaluation, South Coast Water District, Orange County, CA
Compiled and edited an assessment intended to determine potential environmental regulatory and compliance issues associated with regular and emergency maintenance activities needed to maintain operation of SCWD facilities within the Laguna Sur Sanitary Easement.

South Coast Water District, Casden Properties, LLC, Los Angeles County, CA
Compiled and edited focused avian survey reports for California Gnatcatcher and Burrowing Owl. Complied with California Environmental Quality Act (CEQA), state and federal Endangered Species Acts (ESA), Clean Water Act (CWA), California Department of Fish and Game (CDFG) Code Sections, and Migratory Bird Treaty Act (MBTA) associated with emergency maintenance activity requisite to maintain use and operation of SCWD facilities.

Superfund Site, Department of the Navy, Hunters Point, CA
Monitored biological resources on former Hunters Point Naval Shipyard superfund cleanup site. Maintained buffer zones to protect biological resources; prepared and filed daily field monitoring reports; interacted with construction staff to ensure compliance with established environmental protection measures.

Phase I Environmental Site Assessments, Rialto Municipal Airport, Rialto, CA
Compiled and edited Phase I Environmental Site Assessments for four properties in and around the Rialto Municipal Airport.

Pier 400 California Least Tern Nesting Site, Port of Los Angeles, Los Angeles County, CA
Monitored breeding biology of California Least Tern (CLT). Walked transects throughout nesting site to locate new nests and update status of existing nests. Conducted fledgling counts. Banded CLT, Caspian Terns, and Elegant Terns. Assisted with predator management (trapping and relocating) of Peregrine Falcons, American Kestrels, Burrowing Owls, feral cats, corvids, and gulls. Observed and monitored other sensitive species such as Western Snowy Plover, Burrowing Owl, Black Skimmer, and Caspian Tern. Prepared annual breeding reports.

Army Corps of Engineers, southern CA
Conducted California Least Tern (CLT) foraging surveys at the Port of Los Angeles and Camp Pendleton. Monitored Western Snowy Plover activity adjacent to CLT nesting sites. Compiled and analyzed data in an annual foraging report.

Batiquitos Lagoon, Carlsbad, CA
Managed five California Least Tern (CLT) and Western Snowy Plover (WSP) nesting sites. Monitored breeding biology of CLT and WSP. Walked transects throughout nesting sites to locate new nests and update status of existing nests. Installed protective enclosures over WSP nests. Conducted fledgling counts. Coordinated and communicated with predator management, CDFG, and others to optimize reproductive success. Prepared annual breeding report.

Bolsa Chica Ecological Reserve, Huntington Beach, CA
Assisted Dr. Charlie Collins with nest monitoring and banding of California Least Tern, Caspian Terns, Elegant Terns, and Black Skimmers. Monitored Western Snowy Plover activity while conducting graduate studies on Black-necked Stilts.

City of Murrieta/USFWS, southern CA
Monitored construction during Clinton Keith Roadway Ramp Interim Improvement Project in habitats containing the endangered California Gnatcatcher. Interacted with construction crews to ensure environmental compliance.

Upper Newport Bay, Orange County, CA
Conducted avian surveys at Big Canyon and West Bay. Monitored endangered California gnatcatcher. Compiled avian, mammalian, herpetological, and entomological species lists.

Myra Frank, southern CA
Monitored construction during I-5 highway construction in habitats containing endangered species (Willow Flycatcher, Least Bell's Vireo, Unarmored Threespine Stickleback). Interacted with CalTrans and construction crews to ensure environmental compliance.

Alameda Corridor, Los Angeles County, CA
Located and marked Killdeer nests, monitored breeding biology, interacted with construction crews during railroad construction to minimize disturbance to nests. Prepared annual breeding report.

Cajalco Creek Dam and Detention Basin, Riverside County, CA
Monitored construction in habitats containing endangered species (California Gnatcatcher, Stephens' Kangaroo Rat). Ensured construction crews were in compliance with environmental permits. Prepared annual report.

Certifications

Authorized to independently conduct survey and nest monitoring activities for the Western Snowy Plover and California Least Tern, USFWS permit #TE785148-9, 2009

Additional Training

Basic Wetland Delineation, Wetland Training Institute, 2007
Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, 2006
Avian/Bat Fatality Survey Training, Searcher Efficiency, and Carcass Removal at Wind Farms, 2006
Flat-tailed Horned Lizard Survey Certification, 2006
Successful CEQA Compliance Workshop, 2006
40-Hour HAZWOPER Training, 2005
8-Hour HAZWOPER Refresher, 2006
CDFG Scientific Collecting Permit

Michael J. Arvidson
Waste Management/Worker Safety Lead

Education

M.B.A., Management, Graziadio School of Business and Management, Pepperdine University

B.S., Civil Engineering, University of California, Los Angeles

Years of Experience

With AECOM: 4
With other firms: 12

Technical Specialties

Environmental, Health and Safety (EHS) Compliance and Management Systems

EHS Auditing

Environmental Site Assessments

Professional Affiliations

Engineer-in-Training, California

40 hour HAZWOPER, including 8-hour Supervisor Level certification

Mr. Arvidson is a senior project manager with 12 years of project management experience. He has experience leading, evaluating, and preparing waste management, hazardous materials, and worker safety impact analyses for California Energy Commission (CEC) licensing of the Blythe Solar Energy Project, Victorville 2 and Palmdale Hybrid Power Projects in the California Mojave Desert, as well as the proposed solar power projects involving three separate sites. Mr. Arvidson has experience in Application for Certification (AFC) permitting of waste discharge systems, such as land treatment units and surface impoundments.

Experience

Hazards and Hazardous Materials Analysis, Carson, California. Preparation of a technical report for an Environmental Impact Report for the redevelopment and expansion of an oil and gas facility located in Los Angeles County. Project involved the analysis of construction and operational activities and the resulting impacts to the surrounding environment.

Hazards and Hazardous Materials Analysis, Kern County, California. Preparation of a technical report for a gasification project with energy recovery located in northwestern Kern County. Tasking included identifying Federal, State and local permitting entities, determining project impacts, and assessing significant impacts to demonstrate permitting processes for future project development.

Worker Safety Analysis, Blythe, Palen, and Ridgecrest, California. Conducted the analysis and prepared the AFC worker safety section for three solar thermal facilities.

Worker Safety and Waste Management Analysis, California City, California. Preparation of the worker safety and waste management sections of an AFC for the permitting and construction of the Beacon hybrid gas-solar thermal power plant. Prepared the responses to the CEC regarding Preliminary Staff Assessment comments on worker safety and waste management.

Worker Safety Analysis, Palmdale, California. Preparation of the

worker safety and waste management sections of an AFC for the permitting and construction of the Palmdale hybrid gas-solar thermal power plant. The project was deemed data adequate by the CEC. Also assisted with the preparation of data responses.

Health and Safety Compliance Audit, Buena Park, California. A four-day compliance audit to determine compliance with regulatory requirements and internal corporate requirements. Operations at the facility consisted of material handling within the building and delivery by rail and truck, assembly of cardboard boxes, and administrative functions. The health and safety audit scope included confined space entry, hot work, machine guarding, personal protective equipment (PPE), emergency response, mobile equipment, fall protection, dock safety, and training. The deliverable consisted of a verbal and written compliance matrix outlining the findings, regulatory citations, and observations.

Health and Safety Compliance Audit, Canoga Park, California. The five-day environmental, health, and safety audit evaluated regulatory compliance for two facilities with approximately two million square feet of manufacturing space. The on-site operations consisted of the design, fabrication, assembly, and test of complex rocket engines for NASA. Mr. Arvidson was one of two health and safety auditors responsible for the following topical areas: welding and cutting; confined space operations; emergency action plans; flammable and combustible liquids, gases, and vapors; cranes, hoists, and slings; PPE; walking and working surfaces; injury and illness prevention program; and hazard communication. The deliverable consisted of completed audit protocol sheets for each topical area, a matrix identifying the program, regulatory citation, and a description of all observations and findings.

Environmental, Health and Safety Manager, Valencia and Pacoima, California. Operations at two aerospace manufacturing facilities consisted of research and development; machining of steel, aluminum, and titanium; metal finishing; assembly and test of assemblies; quality test and engineering; administrative functions; engineering; material handling; painting of assemblies; and maintenance activities. Developed various health and safety programs, including Federal Aviation Administration's (FAA) drug and alcohol program, Job Safety Analyses, LOTO machine-specific procedures, behavior based training programs, ergonomics program, safety committee process, fall protection program, contractor safety program, and modified work program. Audited all elements of health and safety applicable to the facilities, including Hot Work, hazard assessments, hazardous materials, OSHA recordkeeping, confined space, powered industrial trucks, fall protection, FAA drug and alcohol, machine guarding, hearing conservation, PPE, and HAZCOM (including Proposition 65). Additional responsibilities included environmental engineer and ISO 14001 management representative responsible for all aspects of environmental compliance and conformance to ISO 14001. Developed the ISO 14001 program and upgraded the program to conform to ISO 14001:2004. Developed and implemented hazardous waste management program, including waste

source reduction, universal waste, and non-hazardous waste management. Audited all applicable environmental programs, including air quality, waste water, stormwater, National Pollutant Discharge Elimination System, and waste management.

Arrie Bachrach
Senior Program Manager, Land Use Lead

Education

M.A. (Political Science) University of California Los Angeles

B.A. (Political Science) University of California Los Angeles

Years of Experience

With AECOM: 11
With other firms: 29

Technical Specialties

Regulatory Permitting and Compliance Support

Power Plant Licensing

Environmental Impact Reports/ Environmental Impact Statements

NEPA/CEQA/ CERCLA

Community Relations and Public Participation

Socioeconomics and Land Use

Environmental Communications/Risk Communications

Technical Writing/Editing

Mr. Bachrach has over 39 years of experience in managing and preparing comprehensive environmental assessments/licensing documents for energy, industrial, and other projects. He has served as Project Manager or Deputy Project Manager for numerous power plant projects, both renewable and non-renewable, including solar thermal, solar photovoltaic, geothermal, hybrid solar and combined-cycle, as well as natural gas-fired combined cycle and coal-fired facilities, Mr. Bachrach is known and respected in the environmental industry as an expert on solar and other power plant project permitting).

Representative Project Experience

Cities of Victorville and Palmdale, Hybrid (Combined-Cycle and Solar Thermal) Power Plant Licensing, Victorville, California and Palmdale, California. Deputy Project Manager for California Energy Commission (CEC) licensing of two essentially identical 563 megawatt (MW) hybrid power plants combining natural gas-fired combined-cycle technology with 570 MW of solar thermal generating capacity (parabolic trough collector technology). The Victorville 2 project is on a largely undeveloped site adjacent to the Southern California Logistics Airport (formerly George Air Force Base), and also includes 21 miles of new/upgraded transmission lines and a reclaimed water pipeline to supply cooling water from a nearby wastewater treatment plant. Key issues include biological resources (habitats for a number of special status species exist on the site), cultural resources at the site and along the linear facilities routes, air quality, water resources and visual resources impacts. The Application for Certification (AFC) was judged Data Adequate by the CEC in 41 days (unusually short time) with relatively minor modifications. The project received its CEC license in July 2008.

The Palmdale project is proposed on a roughly 330-acre site near Air Force Plant 42 in Palmdale. Mr. Bachrach prepared the Project Description, Alternatives and Land Uses sections and participated in the preparation of the Socioeconomics section of the AFC. He also assisted in the preparation of the data responses. The project

currently is in the later stages of the CEC licensing process. Key issues are generally similar to the Victorville project (habitat impacts, water resources, cultural and visual resources, and air quality).

First Solar Inc. Environmental Permitting Support, Solar Photovoltaic Project, Riverside County, California. Project Manager for an ongoing project to provide environmental permitting support to the Desert Sunlight Solar Farm Project, a 550-MW solar photovoltaic (PV) project proposed in Riverside County, California. The Project is proposed on Federal land and will utilize First Solar's thin-film cadmium telluride PV technology. AECOM has prepared a Plan of Development (POD) to support First Solar's application to BLM to obtain a Right-of-Way (ROW) grant to allow use of Federal land; this POD was described by Bureau of Land Management (BLM) field office staff in Palm Springs as the "best POD we've seen." AECOM also has prepared a surface hydrology study to support development of grading and storm water management plans, prepared support materials and participated in the Environmental Impact Statement scoping process, provided air quality analysis and water supply analysis support, and prepared a Phase I Environmental Site Assessment, among other tasks.

Solar Millennium, LLC, Solar Thermal Power Plant Licensing. Riverside County California. Project Manager for environmental licensing/permitting of the 500 MW Palen Solar Power Project, a solar thermal plant proposed in eastern Riverside County, California. He also has served provided senior guidance and oversight for two other projects (the 1,000 MW Blythe project and 250 MW Ridgecrest project) using the same technology proposed by the same applicant at different locations in the southern California desert. All three projects need licenses from the CEC and approval of ROW grants from the BLM because the facilities are proposed on Federal land. Thus the Projects must comply with the both Federal law (Environmental Impact Statement under the National Environmental Policy Act) and California law (an AFC to meet requirements of the California Environmental Quality Act [CEQA]). Because these utility-scale projects require huge sites (several thousand acres each), biological and cultural resources issues are particularly critical and have required extensive protocol survey efforts. Because there are special status plant and animal species and sensitive desert habitats involved, the projects' biological permitting needs including Section 7 consultation with the U.S. Fish and Wildlife Services under the Endangered Species Act (ESA) and California Department of Fish and Game (CDFG) 2081 Incidental Take Permit and Streambed Alteration Agreement (SAA) programs, as well as cultural resources approvals under the National Historic Preservation Act, and a variety of other approvals (air quality, water quality, etc.) from state and local agencies.

Abengoa Solar, Inc. Solar Thermal Power Plant Licensing, San Bernardino County, California. Project Manager for early stages of the CEC licensing process for a 250 MW solar thermal power plant (parabolic troughs) proposed near Harper Dry Lake west of Barstow in

San Bernardino County. The project is proposed on a roughly 1,500-acre site adjacent to the dry lakebed; most of the site was previously in agricultural production and thus is largely disturbed. As with virtually all land intensive solar projects in the California desert, potential special status species habitat impacts are a major issue, primarily desert tortoise, Mohave ground squirrel, and Western burrowing owl. Other key issues include potential impacts on water resources, cultural resources, and visual resources. Extensive biological, cultural, and paleontological surveys were conducted. The Project received its license from the CEC in September 2010.

Confidential Client, Environmental Permitting Support, Solar Photovoltaic Project, Riverside County, California. Project Manager for preparation of a POD to support application for a ROW grant from the BLM for a 600+ MW solar photovoltaic project proposed in Riverside County. The project would occupy over 5,000 acres of partly disturbed land (including a several mile transmission line corridor). Key issues include biological resources, cultural resources, and surface hydrology (potential impacts of drainage design for the solar site on properties downstream of the site).

NextEra Energy Resources, Inc., Environmental Permitting, Solar Thermal Project, Kern County, California. Deputy Project Manager for preparation of the AFC submitted to the CEC for the Beacon Solar Energy Project (BSEP), a 250-MW solar thermal facility proposed near California City (in Kern County), that will use parabolic trough technology. In addition to the AFC, which is functionally equivalent to a CEQA process, AECOM provided overall permitting support. The site is over 2,000 acres, and requires biological permitting such as a Section 10 Habitat Conservation Plan under the ESA and CDFG 2081 Incidental Take Permit and SAA. Permitting has also included obtaining a Lot Line Adjustment from Kern County Planning Department (KCPD), as well as working with KCPD on other land use and water use issues. Air permits were obtained from Kern County Air Pollution Control District and Lahontan Regional Water Quality Control Board, as well as other required permits. Use of groundwater for power plant cooling was a major issue, and the site has a major earthquake fault running through it. The project was licensed by the CEC in August 2010.

Confidential Client, Geothermal Power Plant Licensing, Imperial County, California. Project Manager for CEC licensing of a major modification to a proposed geothermal power generation facility in Imperial County. The project was previously licensed by the CEC but was shelved for several years and the revised project used a different geothermal technology (single flash v. multiple flash), involved three 53-MW geothermal (v. one 215 MW plant) a larger plant site (that included the original plant site), a completely different configuration of plant site facilities, and different locations for off-site geothermal injection wells and for the geothermal production wells. These modifications were so extensive that, while titled an Amendment Petition, the document covered all the disciplines included in full CEC applications to the same depth as a full AFC. Key issues included

impacts on the habitats of a number of special status wildlife species (particularly the Yuma clapper rail), air emissions during construction and operations and water supply for power plant cooling. The document is currently being processed by the CEC.

Sempra Energy, Combined-Cycle Power Plant Licensing, Escondido, California. Deputy Project Manager for the licensing by the CEC of a 550-MW gas-fired combined-cycle power plant in Escondido, California. The project was proposed within a planned industrial park, to be developed on the last major undeveloped area designated for industrial use in the City of Escondido in San Diego County. Key issues included visual resources impacts, noise, air quality, biological resources impacts, and land use compatibility. The AFC was judged Data Adequate by CEC staff with only minor changes needed; CEC staff praised the quality of the document in an interview with a local newspaper in Escondido. Subsequent to the CEC licensing decision, prepared petitions to amend the CEC conditions of certification to deal with changes in project conditions with respect to allowable noise levels and the use of reclaimed water for power plant cooling. Project construction was completed and the power plant went into operation in early 2006.

SDG&E, Otay Mesa Due Diligence Assessment, San Diego County, California. Project Manager for a due diligence review related to the potential purchase of the partly constructed Otay Mesa power plant from Calpine. Review identified the status of compliance with CEC requirements, estimated costs to complete, looked at permit conditions to identify potential problems that could prevent the plant from operating, and researched permitting issues such as biological mitigation and potential expiration of the Prevention of Significant Deterioration permit. Based on the risks identified by the report, SDG&E opted to negotiate the purchase of the facility to happen after construction is completed

Howard W. Balentine, CCM, P.E.
Greenhouse Gases, Aviation and Plume Impacts Lead

Education

ME (Environmental Engineering) University of Florida

MS (Business Administration) Boston University

BS (Physics) United States Air Force Academy

Years of Experience

With AECOM: 14
With other firms: 22

Technical Specialties

Climate Change Policy Assessment

Greenhouse Gas Emissions Inventory Development and Verification

Emission Inventory Development and Analysis

Aviation Meteorology

Atmospheric Dispersion Modeling / Air Quality Analysis

Air Quality Permitting
Human Health Risk Assessment

Off-Site Consequence Analysis

Mr. Balentine's areas of expertise include air quality permitting and modeling; regional and facility emission inventory development for criteria, greenhouse gas, and toxic air pollutants; off-site consequence analysis of chemical spills, boundary layer and air pollution meteorology, and health risk assessment, greenhouse gas emission inventory development and verification, climate change issues, Life Cycle Assessment (LCA). He has over 25 years of experience in emission inventory development and air quality modeling and has participated in a number of regional emission inventory and modeling projects in North America, the Middle East, Southern China, and South America. He has performed numerous assessments of hazardous materials spills and off-site consequence analyses for hazardous material spills. His experience includes performing aviation related analyses for a number of solar and hybrid solar/combined-cycle permitting and licensing projects and is expert in the analysis of turbulence and glare issues associated with aviation safety. He is currently Technical Leader for AECOM Environment for Greenhouse Gas (GHG) emission inventory, carbon footprint, and Climate Change activities.

Experience

Inland Energy, Environmental Permitting, California. Prepared aviation analyses portions of the Application for Certification (AFC) for two hybrid solar thermal/combined-cycle projects proposed in southern California. The proposed Victorville 2 project is located adjacent to the Southern California Logistics Airport (former George Air Force base). The Palmdale project the site is located adjacent to Air Force Plant 42. Mr. Balentine prepared the analyses demonstrating compliance with Federal Aviation Administration (FAA) requirements for structures in the aircraft approaches and departure routes for both the Victorville 2 Hybrid Power Project and the Palmdale Hybrid Power Project. In both cases, glint/glare analyses and thermal plume analyses were also conducted. He also assisted with modeling of water vapor plumes from the cooling towers and heat recovery steam generators (HRSGs) at these proposed facilities.

Solar Millennium, LLC, Blythe Solar Power Project, California. Prepared aviation analyses portion of the Traffic and Transportation

Cooling Tower Plume Modeling

Glint and Glare Analysis

Professional Affiliations

Certified Consulting Meteorologist, American Meteorological Society

Registered Professional Engineer, Texas, No. 67215

Air & Waste Management Association

American Meteorological Society

section of the Blythe Solar Power Project AFC, located approximately 1.5 miles from the Blythe Municipal Airport. This included both the standard analysis with respect to FAA requirements for evaluating whether project structures would exceed height limitations, as well as an analysis of potential turbulence impacts on aircraft of the thermal plume from the project's dry cooling towers. He conducted an assessment of the potential glint and glare from the solar arrays, including commissioning of a flyover of the Solar Electric Generating System solar power plant to assess the potential significance of glint and glare to aircraft safety. In addition, he directed the performance of computational fluid dynamic modeling of the thermal plume to assess the risk to aviation safety of thermal plumes from the dry cooling tower. He prepared the application to the Riverside County Airport Land Use Commission (ALUC) to obtain ALUC concurrence that the project is a compatible land use with the Blythe airport and testified multiple times before the ALUC.

Powers Engineering, Aviation Turbulence Analyses for the Riverside Energy Center, California. The Riverside Energy Center (REC) is a gas turbine combined cycle power plant proposed for location approximately half a mile north of the Riverside Municipal Airport. As part of the licensing proceedings for the REC, he performed an analysis of the potential turbulence from thermal plumes released by the REC and their potential impact on aviation. He also responded to licensing agency comments on the REC thermal plume analysis.

U.S. Air Force, Weather Forecaster, U.S. and West Germany. Air Force officer and staff meteorologist. Responsibilities included preparation of terminal area weather forecasts, preparation of aviation warnings for turbulence and other aviation hazards, provision of meteorological flight briefings for military flight operations throughout North America and Western Europe, and provision of meteorological support the Commander of U.S. Forces, West Germany and for the operation of Air Force One and Marine One.

Confidential Law Firm, Review of Annual Precipitation Events in Marin County, California. In support of a civil suit, obtained certified precipitation data and reviewed rainfall data for multiple sites in northern California for the period 1996-2004. Used statistical means to compare rainfall in water year 1998 to preceding and succeeding years and determined the departure from normal and the statistical significance of those departures.

Confidential Law Firm, Analysis of Meteorological Conditions. In support of a civil suit, examined the meteorological conditions occurring before, during, and after an accident. The meteorological analysis included determining the time of sunset and the solar elevation angle and solar azimuth at the time of an incident. A deposition was given.

Confidential Law Firm, Assessment of the Occurrence of High Winds and Dust Emissions from a Construction Site, California. In support of a civil suit, reviewed meteorological data and determined the occurrence of high wind conditions during the period in question.

For high wind data, reviewed available data to determine those events associated with Santa Ana flow conditions.

Various Clients, Cooling Tower Fogging and Icing Modeling using SACTI; California, Nevada, Iowa, Delaware. Performed cooling tower plume fogging and icing analyses for a number power plant and other cooling towers. The EPRI SACTI model was used to perform the modeling. Issues investigated included the frequency of fogging and icing on nearby roadways, salt deposition on nearby agricultural fields, and the rate of deposition of rime icing on nearby power lines. For certain projects, post-processing software was developed to address site-specific modeling issues. For power plants in California, the SACTI modeling was supplemented with other models used to assess the potential for visual plume formation from HRSGs at combined cycle natural gas power plants.

Sempra Energy Resources, Palomar Energy Project, Escondido, California. Task manager for air quality modeling, human health risk assessment, and offsite consequence analysis for a successful permitting project for a new merchant power plant in Escondido, California. The air quality analysis included modeling using ISCST3 and AERMOD models, VISCREEN Level-2 analysis plume blight visibility screening analyses, CALPUFF regional haze and Class I area other air quality related values analysis, health risk assessment modeling, and visible plume analyses. Performed an off-site consequence analyses for the release of aqueous ammonia.

Southern California Edison, Class I Area Modeling Using CALPUFF, Nevada. Performed regional air quality impact assessment modeling for the Mohave Power Plant near Laughlin, Nevada using the CALPUFF model. The objective of the modeling was to assess changes in visibility, acid deposition, and other air quality related values in Grand Canyon and Joshua Tree National Parks due to major modifications at the facility. The meteorological modeling domain included both Class I areas with air quality modeling domains focused on the two Class I areas.

Confidential Client, Petroleum Refinery, Analysis of Metals Deposition from Petroleum Refinery Emissions, Los Angeles area. Project manager of an air quality modeling analysis assessing average heavy metals deposition to a watershed surrounding a petroleum refinery. The modeling was prepared using the CALPUFF model and was in response to agency concern on toxic impacts to wildlife in the designated watershed.

Confidential Client, Aerospace Industry, Modeling Analysis of the Potential Hazards from the Venting of Rocket Propellant during Fuel Tank Loading Operations, Southeast U.S. Project manager of an air quality modeling analysis examine the potential ambient concentrations of rocket propellants released during fuel tank loading operations. The objective was to determine the safe amount of hypergolic oxidizer and propellant that could be released simultaneously during accidental spills and not lead to toxic or explosive conditions. The modeling was performed using CALPUFF.

Various Clients, Visibility Modeling using CALPUFF; California, Arizona, Nevada. Performed visibility and acid deposition modeling using the CALPUFF model to assess acid deposition impacts and the contribution to regional haze of emissions from a number of power plants and other large stationary sources. The modeling followed the Federal Land Managers Air Quality Group guidance for visibility modeling using CALPUFF. The screening mode of CALPUFF was used to estimate the visibility and acid deposition impacts in nearby Prevention of Significant Deterioration Class I areas.

TranSystems, Transportation Facility Air Quality Analysis, Southern California. Prepared an air quality analysis of emissions from two warehouse distribution facilities in Southern California. The URBEMIS model was used to estimate emissions of criteria pollutants from traffic and area sources associated with the projects. The emission computations were prepared for three future years and the resultant emissions totals were compared to threshold emission values to determine the magnitude of air quality fees to be paid to the local air district as a mitigation measure under the California Environmental Quality Act.

Confidential Petroleum Refinery, Health Risk Assessment. Principal Investigator for a project to develop criteria and an air toxic emission inventory for a confidential petroleum production and refining company. The emission inventory was used to perform a health risk assessment for population exposure to the toxic emissions from facility operations. Task performed included conducting a site visit to gather the data to be used to compute the emission inventory, performing air quality modeling using the AERMOD model, and performance of the health risk assessment.

Riverside Cement Company, Facility Emission Inventory Reports, Oro Grande and Riverside, California. Project manager for two projects to develop comprehensive emission inventory plan and reports for criteria pollutants for the Oro Grande and Crestmore cement plants. The inventories were based on an emission inventory plan that was approved by the local air district that included all sources of criteria pollutant emissions for the cement plants and associated quarry. The completed CEIRs were submitted to the districts in electronic format.

Western States Governor's Association, Micro Inventory, Grand Canyon National Park. Task leader of a project to develop a local (micro) inventory for Grand Canyon National Park. The objective was to develop emission estimates to support evaluation of emission-visibility relationships in the Grand Canyon. The project included assessment of all emissions sources in the Park, consisting of stationary and mobile sources, including vehicle, rail and aircraft. The inventory was developed to support regional emission inventory development and as input to a visibility modeling analysis.

Woodside Natural Gas, Life Cycle Assessment and Emissions Inventory Development for the Proposed OceanWay LNG Deepwater Port, Southern California. Mr. Balentine is technical project manager for an ongoing LCA commissioned by Woodside

Natural Gas for the OceanWay Project, a proposed liquefied natural gas (LNG) deepwater port off Southern California. He is responsible for ensuring that the technical aspect of the LCA meets ISO 14040/14044 requirements for the conduct of an LCA, reviewing the LCA modeling, and managing the preparation of the energy use and GHG emission metrics for the lifecycle of the entire LNG train from gas exploration end user combustion of the regasified LNG. He is also responsible for coordinating the input for the final report from the various authors and the preparation and editing of the final report. He was Project Manager of the development of the criteria and toxic air pollutants and GHG emission inventories for construction and operation of the OceanWay project, including quantifying operational emissions associated with LNG regasification aboard the regasification LNG carrier (RLNGC), vessel transit, lightering with the LNG carrier, and support activities including support vessels and helicopters.

Covanta Energy, Greenhouse Gas Emission Inventory Development for California Operations. Project Manager for development of a GHG emission inventory for Covanta Energy's 12 California facilities for reporting years 2005 - 2009. The facilities included landfill gas-fired power plants, wood-fired power plants, and a waste to energy facility. Emissions were estimated for the six Kyoto GHGs. Emission computations were performed following the California Climate Action Registry (CCAR) General Reporting and Power and Utility Protocols, the Climate Registry General Protocol, and subsequently the Air Resources Board Mandatory GHG Reporting guidance. Source-specific GHG emission factors were developed for N2O and CH4 based on source tests for each facility. The inventories were entered into the CCAR's Online Reporting System CARROT. After submission of the inventory, coordinated the certification of the inventories between the Certifier and Covanta Energy.

Pacific Ultrapower Chinese Station (PUCS), Greenhouse Gas Emission Inventory Development. Project Manager for development of a GHG emission inventory for PUCS for 2007 - 2009. PUCS is a wood burning power plant in northern California. Emissions were estimated for the six Kyoto GHGs following the CCAR Power and Utility Protocol, the Climate Registry General Protocol, and subsequently the Air Resources Board Mandatory GHG Reporting guidance. Source-specific N2O and CH4 emission factors were computed based on source testing data. After submission of the inventory, coordinated the certification of the inventories between the Certifier and PUCS.

Selected Publications and Presentations

Balentine, H.W., et al.,2010. Lessons Learned During Covanta's Five Years Voluntary and Mandatory Reporting of GHG Emissions to the CCAR, TCR, and ARB. Solid Waste Association of North America, WASTECON 2010, Boston, MA, August15-17.

Balentine, H.W., et al.,2010. What are the Appropriate Emission Factors for CH4 and N2O for EfW and Biomass to Energy Facilities?. Solid Waste Association of North America, WASTECON 2010,

Boston, MA, August15-17.

Balentine, H.W., and Radloff, E., 2010. "GHG Reduction and CO2 Indexing Study", Canadian Marine Advisory Council, Air Emissions Working Group Session, CMAC Spring Meeting, Montreal, QC, April 27.

Balentine, H.W., 2009. "GHG Emission Inventories and Reporting", California's Global Warming Solutions Act Current Implementation Status and Future Plans, West Coast Section Meeting, Air and Waste Management Association, Diamond Bar, CA, April 23.

Balentine, H.W., Goff, N., and Hahn, J.,2009. "Use of Steam Flow Method for Estimating GHG Emissions from Heterogeneous Solid Fuels", First International Greenhouse Gas Measurement Symposium, San Francisco, CA March 22-25.

Balentine, H.W., Field, K., 2009. "Mitigation Measures and Early Actions under AB32", Paper 657, Air and Waste Management Association 101st Annual Meeting, Portland, OR, June 24-25.

Balentine, H.W., Field, K, and Hahn, J, 2008. "Greenhouse Gas Regulation in California and the Municipal and Biomass Waste Management Industry", Presentation C5.2, Electric Utilities Environmental Conference 2008, Tucson, AZ, January 27-30.

Balentine, H.W., Collins, E.K, and Hahn, J.L., 2007. "Greenhouse Gas Emission Reductions under California AB32 and Implications for Industry in California", Air and Waste Management Association 100th Annual Meeting, Pittsburgh, PA, June 26-29.

Balentine, H.W., 2007. "A Review of Lessons Learned in Developing Regional Air Pollutant Emission Inventories and Their Application to Improve the PRD Regional Emission Inventory", Workshop on Regional Air Quality Management in Rapidly Developing Economic Regions, Zhuhai, Guangdong, Peoples Republic of China, March 12-13.

Balentine, H.W., 2007. "Process Hazard Analysis and Offsite Consequence Analysis", 9th Annual California Unified Program Conference, Garden Grove, California, February 14.

Balentine, H.W., 2007. "Implications of California AB32 Global Warming Solutions Act for the Utility Industry", Presentation C5.5, Electric Utilities Environmental Conference 2007, Tucson, AZ, January 22-24.

Balentine, H.W., San Martin, G., and Dreessen, W., 2005. "The Challenges of Estimation of GHG Reductions from Power Plants", Air and Waste Management Association 98th Annual Meeting, Minneapolis, MN, June 24-28.

San Martin, G., Balentine, H, and Dreessen, W., 2005. Overview of GHG Emission Estimation for the Electric Utility Industry, Electric Utility Environmental Conference, Tucson, AZ, January 2005.

Balentine, H.W., 2004. , "Health Based Compliance Alternatives" and

"Example Low-Risk Demonstration", American Forest and Paper Association Wood MACT Workshop, Portland, OR, September 15-16.

Balentine, H.W., Pfohl, A, and Dreessen, W., 2004. "Current Trends in the Implementation of Greenhouse Gas Registries and Regulations at the State Level", Air and Waste Management Association 97th Annual Meeting, Indianapolis, IN, June 22-25.

Balentine, H.W., Pfohl, A, and Dreessen, W., 2004. "Implications of the Use of Stochastic Risk Assessment for Assessment of Urban Air Toxics and Residual Risk", Air and Waste Management Association 97th Annual Meeting, Indianapolis, IN, June 22-25.

Balentine, H.W., 2004. Assessing Impacts of New Sources on Visibility in Class I Areas, Air and Waste Management Association West Coast Section Annual Meeting, Ventura, CA, May 13-14.

Balentine, H.W., Paine, R.J., and Heinold, D.W., 2003. "Application of AERMOD and CALPUFF to the Desert Regions of California", Presented at the California Desert Air Working Group (CDAWG) Fall 2003 Conference, Death Valley, CA, October 22-24.

Balentine, H.W. 1999. "Visibility Impact Screening Requirements in Federally Protected Areas and Implications for Power Production Sources", Paper R3.4, Electric Utilities Environmental Conference, January 11-13, 1999. Tucson, AZ.

Balentine, H.W. and Lauer, G. 1999. "Overview of Greenhouse Gas Emission Mitigation under the Kyoto Conference", Paper GHG8.2, Electric Utilities Environmental Conference, January 11-13, 1999. Tucson, AZ.

Lauer, G., Balentine, H.W. and Tombach, I. 1998. "Petroleum Refinery Greenhouse Gas Emissions", Paper ENV-98-178, 1998 National Petrochemical and Refiners Association Environmental Conference, Corpus Christi, TX.

Dickson, R.J., W.R. Oliver, and H.W Balentine, 1997. "Emission Estimates for Assessing Visual Air Quality on the Colorado Plateau." J. Air & Waste Management Assoc. 47:185-193.

Balentine, H.W. 1996. "Air Quality Impact Analysis," Chapter 5 in Air Quality Permitting by R.L. Leonard, Lewis Publishers, CRC Press, Boca Raton, FL.

Dickson, R.J., W.R. Oliver, and H.W Balentine. 1996. "Assessment of the Grand Canyon Visibility Transport Commission Emissions Inventory," Air and Waste Management Association 89th Annual Meeting, Nashville, TN, June.

Balentine, H.W., and R.J. Dickson. 1995. "Development of Uncertainty Estimates for the Grand Canyon Visibility Transport Commission Emissions Inventory." Presented at the AWMA specialty conference "The Emissions Inventory: Programs and Progress," Research Triangle Park, NC October 13-15.

Thomas M. Barnett
Executive Vice President

Mr. Barnett has been in the power plant development field for more than 30 years and has developed projects in a dozen different states. He joined Inland Energy, Inc. in 2003 after more than 15 years with Constellation Energy Group, where he served as a Vice President in charge of power plant development in the western U.S.

After receiving his Master's Degree, Mr. Barnett spent the first 10 years of his career in the waste-to-energy (WTE) field: following several years with Gordian Associates, a national energy management consulting firm, he and several colleagues split off and formed their own Washington D.C.-based consulting firm, GBB, which specialized in the management and development of WTE projects. In 1983 Mr. Barnett became Director of Business Development for Clark-Kenith, an Atlanta based company which designed, built, owned and operated WTE facilities. While with Clark-Kenith, Mr. Barnett was responsible for developing five WTE projects across the eastern U.S. that remain in operation today.

Key Qualifications

- ☑ 30 years of experience in the energy / power generation industry
- ☑ 10 years in southern California, successfully developing power plants and alternative energy solutions for High Desert communities
- ☑ Primary driver for High Desert Power Project, named *Power* magazine's Power Plant of the Year in 2003

Education:
MS, Environmental Science, University of Virginia

Previous Experience:
Officer with US Army 82nd Airborne Division during Viet Nam era; retired as a Major in the Army Reserves

Mr. Barnett joined Baltimore-based Constellation Energy in 1988 as Director of Business Development. During his 15 year tenure with Constellation, Mr. Barnett was involved in the development of two waste coal projects, several natural gas projects and one of the last WTE projects built in the U.S. In 1999 Mr. Barnett relocated to southern California to assume the post of Vice President in charge of Western Power Plant Development. While with Constellation in California, Mr. Barnett developed a 43 MW wind farm in the San Gorgonio Pass (near Palm Springs), which is operating successfully today.

Prior to joining Inland, Mr. Barnett led the successful development of Constellation's 830-MW High Desert Power Project (HDPP) in Victorville, California. He led the effort that resulted in the California Energy Commission granting a construction and operation permit to HDPP on May 3, 2000 and construction commenced in April 2001. In March of 2001, in part through the efforts of Mr. Barnett, the California Department of Water Resources signed a 10-year contract for the facility's output for $3.6 billion. In April, 2003 the plant came on line ahead of schedule and on budget.

In September 2003 the High Desert Power Project was awarded "Power" Magazine's prestigious Power Plant of the Year for 2003. The editor of "Power" specifically cited Mr. Barnett's development effort as a key reason for the award. Mr. Barnett is leading Inland Energy's efforts to develop hybrid solar/gas power plants for communities in southern California, particularly those in the High Desert.

Most recently, Mr. Barnett has been responsible for managing the development of several innovative renewable energy projects in Southern California: he served as Project Manager for the successful permitting effort on the Victorville 2 Hybrid Power Plant (which received its CEC permit in July, 2008) and as Officer in Charge of the permitting effort for the similar Palmdale Hybrid Power Plant currently undergoing CEC review; he is also involved in managing the development effort for a 50 MW Biomass Project near Colton and a 50 MW Photovoltaic Project in the High Desert.

Elizabeth C. Copley, AICP
Urban Planner/Socioeconomics Lead

Education

MUP, Urban Planning, University of Michigan, Ann Arbor

BA, Urban Studies, University of Michigan, Ann Arbor

Registrations/Certifications

American Institute of Certified Planners

Years of Experience

With AECOM: 22
With other firms: 13

Technical Specialties

Energy Project Planning and Permitting (specializing in Renewable Energy Projects)

NEPA and CEQA Impact Assessment

Socioeconomics and Land Use Impact Assessment

Professional Affiliations

National Association of Environmental Professionals
American Institute of Certified Planners

Training and Certifications

OSHA 40-Hour HAZWOPER Certification and 8 Hour Refresher

Elizabeth Copley is a Program Manager at AECOM, and manages the Northern California Environmental Assessment Group. In addition to managing an extensive program of projects for the Army Corps of Engineers and the Navy, she has directed and performed National Environmental Policy Act (NEPA) and State-NEPA technical studies for power plants, pipelines and transmission lines, offshore Liquefied Natural Gas (LNG) terminals, refineries, waste management facilities/sites, and commercial, mixed use and residential projects. Her work has involved projects located in California, the Northeastern states, the Southeast and Gulf Coast, and the Great Lakes region, projects which often require numerous layers of environmental review and close coordination with federal, state and local agencies and the public.

Experience

Energy Facility

Inland Energy, Application for Certification of Hybrid Solar-Gas Power Plants, Victorville 2 and Palmdale, California. Served as senior California Environmental Quality Act (CEQA) technical lead for socioeconomic/environmental justice analyses sections of the Applications for Certification (AFCs) to the California Energy Commission for both the Victorville 2 and Palmdale Hybrid Power Projects. These projects were proposed as hybrid solar thermal and natural gas combined-cycle power plants. Directed the selection and research of projects to be included in the cumulative impact analyses for the project.

Solar Millennium; Applications for Certification of Three Solar Thermal Power Plants; Kern and Riverside Counties, California. Served as project manager of the AFC and comprehensive in-lieu-of permitting for the Ridgecrest Solar Power Project (250 megawatt [MW]), near Ridgecrest in Kern County. Also provided senior socioeconomic technical support to two other sites (Blythe at 1000 MW and Palen at 500 MW), in Riverside County, for the same client. All three sites are proposed to be located on Bureau of Land Management (BLM) lands in the Mojave Desert and require a grant of Right-of-Ways (ROW) on BLM lands. These power plants would use solar parabolic trough technology and would occupy areas ranging from 1,400 to 6,300

acres on ROW's of from 4,000 to 16,000 acres. Due to the large size of these projects, the primary issues addressed included impacts to biological resources (including federally-listed desert tortoise and Mohave desert ground squirrel) and land use. Tasks included preparation of AFCs, supporting documentation for the Staff Assessment/Environmental Impact Statement, and Biological Technical Reports/Cultural Technical Reports for the three projects. Work also has included preparation of Environmental Assessments (EAs) for geotechnical investigations at the sites.

Fotowatio Renewable Ventures; Solar Photovoltaic Enhanced Use Lease Project at Edwards Air Force Base; Kern County, California. Project manager for comprehensive environmental planning, permitting, and impact assessment for a proposed 450-MW solar photovoltaic project to be sited on 3,000 acres at Edwards Air Force Base as part of the Air Force's Enhanced Use Lease Program. To date have conducted a Preliminary Habitat Assessment (including field work and report preparation) and Critical Issues Analysis (CIA) for siting of the solar facility and approximately 9-mile transmission line. Analyzed critical issues and potential fatal flaws related to biological resources, cultural resources, hydrology, federal and state wetlands jurisdiction, water supply, geological hazards, unexploded ordnance, land use, environmental justice, and other topic areas. After the optimal siting for the project components is determined through the CIA process, will provide impact assessment services for Federally Reportable Violations to fulfill the project's NEPA and CEQA requirements. These services are to include biological and cultural resources surveys and other special studies needed to refine project design and identify appropriate mitigation. Also providing support in obtaining other required federal, state, and local approvals and permits for the project.

Fotowatio Renewable Ventures, San Francisco, California, Site Screening Evaluations. As project manager, has conducted critical issues/site screening/regulatory evaluations for a number of 200-300 acre sites being considered for utility-scale photovoltaic solar power projects proposed for sites throughout the Mojave Desert of California and in Colorado, as well as several commercial sites proposed for small utility roof-top installation of solar photovoltaic systems in urbanized settings. Identified regulatory requirements and permits, analyzed critical issues and potential fatal flaws related to biological resources, cultural resources, federal/state waters jurisdiction and hydrology, water supply, geological hazards, unexploded ordnance, land use, environmental justice, and other topic areas.

Woodside Natural Gas, OceanWay Deep Water Port/LNG Facility, Offshore, Los Angeles and Orange Counties, California. Served as senior technical lead for land use, socioeconomics, and environmental justice analyses for a Deepwater Port Application to the Maritime Administration and US Coast Guard supporting a CEQA/NEPA Environmental Impact Statement/Environmental Impact Report for a proposed

deepwater LNG regassification facility with pipeline landfall/transmission in either Los Angeles or Orange County. Substantive analyses were required of alternative routes for landfall onshore and pipelines to interconnect to the Southern California Edison transmission system through Los Angeles and Orange County neighborhoods. These analyses included the identification of land use entitlements and encroachment approvals, and other environmental permitting constraints associated with the selection of the preferred route.

Chevron USA, CSLC Lease Extension Application/CEQA, El Segundo Marine Terminal, El Segundo, California. Prepared the socioeconomic analyses, particularly the analysis of the effect of the project on Environmental Justice Populations and Commercial Fisheries.

Numerous Federal Energy Regulatory Commission NEPA Pipeline Projects. For Federal Energy Regulatory Commission (FERC)-required NEPA Environmental Impact Assessments, was Land Use/Planning, Socioeconomics, and Environmental Justice Technical Lead for: Sempra Port Arthur, Conoco-Phillips Compass Port, Southern Gas Elba Island Terminal, Koch Industries, Algonquin Gas Transmission, National Fuel Gas Supply, Duke Energy, Liberty Natural Gas Excalibur Offshore LNG Regasification, NY/NJ; and other nearshore and offshore LNG terminals and pipelines in the East, Southeast and Gulf Coast region.

Other Socioeconomics/Environmental Justice Impact Assessments

U.S. Army Corps of Engineers, Mobile District, NEPA Disposal and Reuse EAs/EISs, BRAC Sites, Nationwide Contract. Project Manager of the Environmental Impact Statement for the disposal and reuse of Fort McPherson, Georgia and the EA under preparation for the disposal and reuse of the Michigan Air National Guard-Selfridge (Sebille Manor), Michigan. In addition, she is serving in a technical leadership role, as Resource Area Leader for Land Use/Visual Resources and Socioeconomics/Environmental Justice, providing consistency between analyses prepared for multiple sites nationwide. To date, the sites include Fort Monroe and Fort Eustis Georgia; Fort McPherson and Fort Gillem, Georgia; Michigan Air National Guard-Selfridge (Sebille Manor); Kansas Army Ammunition Plant, Kansas; Lone Star/Red River Army Ammunition Plants, Texas; Riverbank Army Ammunition Plant, California, and Joint Forces Training Base, Los Alamitos, California (a non-Base Realignment and Closure site).

U.S. Army Corps of Engineers, New England District, Dredged Material Disposal Site(s) for Long Island Sound Environmental Impact Statement, Long Island, New York. Managed a comprehensive NEPA process for the designation of a dredged material disposal site(s) for Long Island Sound. In

addition to a wide range of project management responsibilities, she directed the surveying of commercial and recreational fishing interests regarding potential conflicts of disposal methods and sites with their activities; and port authorities, marina owners and operators, boat-builders and others in the marine trades on the need for dredging in Long Island Sound and the impact of water-dependent uses on the regional economy.

U.S. Army Corps of Engineers, New England District, Study of the Viability of Port Development, Quonset Point, Rhode Island. Managed a NEPA analysis of the economic viability of various alternative proposals for port development at Quonset Point. The analyses served to inform the Corps of Engineers' Regulatory Division in determining, subject to NEPA, the Least Environmentally Damaging Practicable Alternative in a decision on a Section 404 permit application for significant wetlands filling of Narragansett Bay.

Education and Training

- M.S., Geological Sciences, emphasis in Paleobiology, University of California, Santa Barbara
- B.A., major in Creative Studies, emphasis in Biology (interdisaplinary degree in Biology, Geology and Paleontology), University of California, Santa Barbara

Areas of Expertise

Cara Corsetti, Office Principal of SWCA Environmental Consultants' Pasadena office, specializes in the direction and management of multi-disciplinary technical studies and environmental assessments conducted in support of environmental documents, particularly in the disciplines of cultural resources, natural resources, historic preservation, geoarchaeology and paleontology. Her technical specialty is paleontology. Her current responsibilities include agency and client coordination and facilitation; program and office development; proposal writing and project management; budget preparation and oversight; managing and coordinating the tasks of technical and administrative staff; conducting paleontological assessments and mitigation programs; and the production and editing of technical reports.

With over 18 years of management experience, Ms. Corsetti has been involved in over 350 projects throughout California, Nevada, Colorado, Wyoming and Utah, and has experience working on a multitude of projects types, including oil and gas pipelines, transmission lines, seismic projects, geothermal, natural gas, wind and photovoltaic projects. She has successfully worked with various lead agencies such as the Federal Energy Regulatory Commission (FERC), the Bureau of Land Management (BLM), Caltrans, and the California Energy Commission (CEC).

Ms. Corsetti has been certified through the California Energy Commission (CEC) as a Paleontological Resource Specialist (PRS) or Alternative PRS on a project specific basis for 8 projects throughout California during pre-construction and construction phases of various small and large power plants and associated linear facilities. She has worked on over 20 power projects under CEC jurisdiction in either the permitting or construction phase. She has extensive and direct paleontological resources experience in the project area, and oversaw the Paleontological Resource assessment for the Blythe Solar Power Project (BSPP) Application for Certification (AFC). Ms. Corsetti obtained both her undergraduate and graduate degrees in California, conducted her Master's Thesis field research in Paleontology in southern California, and has worked as a professional paleontologist throughout California for over 10 years. She is proficient in the identification of both invertebrate and vertebrate fossils in the laboratory and field. Ms. Corsetti is a member of the following professional organizations: Society of Vertebrate Paleontology; Society for Sedimentary Geology (SEPM); Geological Society of America; Paleontological Society; and Association for Environmental Professionals.

Relevant Projects

Project Manager/Senior Paleontologist, Blythe Solar Power Project (BSPP), Riverside County, Califonria (2009 – Present): SWCA is currently providing paleontological resources services for the Blythe Solar Power Project (BSPP). The scope of work includes (1) performing background research and museum records searches of the project area and vicinity, (2) conducting

paleontogical field survey, and (3) preparating a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing of the entire project area. Additionally, SWCA has been retained to provide paleontological resources compliance services during construction (estimated 2010). *Client: AECOM*

Project Manager/Senior Paleontologist, Ridgecrest Solar Power Project (RSPP), Kern County, California (2009 – Present): SWCA is currently providing paleontological resources services for the Ridgecrest Solar Power Project (RSPP). The scope of work includes (1) performing background research and museum records searches of the project area and vicinity, (2) conducting paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing of the entire project area. Additionally, SWCA has been retained to provide paleontological resources compliance services during construction (estimate 2011/2012). *Client: AECOM.*

Project Manager/Senior Paleontologist, Palen Solar Power Project (PSPP), Riverside County, California (2009 – Present): SWCA is currently providing paleontological resources services for the Palen Solar Power Project (PSPP). The scope of work includes (1) performing background research and museum records searches of the project area and vicinity, (2) conducting paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing of the entire project area. Additionally, SWCA has been retained to provide paleontological resources compliance services during construction (estimated 2011). *Client: AECOM.*

Project Manager/Senior Paleontologist, Mojave Solar Project (MSP), San Bernardino County, California (2009 – Present): SWCA is currently providing paleontological resources services for the Mojave Solar Project (MSP). The scope of work includes (1) performing background research and museum records searches of the project area and vicinity, (2) conducting paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing of the entire project area. Additionally, SWCA has been retained to provide paleontological resources compliance services during construction (estimated 2010/2011). *Client: Abengoa Solar, LLC.*

Project Manager/Senior Paleontologist, Palmdale Hybrid Power Projecy (PHPP), Los Angeles County, California (2008): SWCA provided paleontological resources services for the Palmdale Hybrid Power Project in the city of Palmdale and unincorporated Los Agneles County, California. The scope of work included (1) performing background research and museum records searches of the project area and vicinity, (2) conducting a paleontogical field survey, and (3) recordation of paleontological localities in the field, and (4) preparation of a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing associated with the approximately 377-acre plant site, and 53.7 linear miles of assocoated utility and transmission routes. *Client: AECOM.*

Project Manager/Senior Paleontologist, Beacon Solar Energy Project, Kern County, California (2007 – Present): SWCA provided paleontological resources services for the Beacon Solar Energy Project in Kern County California. The scope of work includes (1) performing

background research and museum records searches of the project area and vicinity, (2) conducting paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing associated with the approximately 2500 acre plant site, and associated utility lines. *Client: AECOM.*

Senior Paleontologist, Riverside Energy Resource Center Units 3 & 4, Riverside County, California (2007 – present): SWCA is currently providing paleontological resources services in support of the Small Power Plant Exemption Applicationo for the Riverside Energy Resource Center Units 3 & 4 Project in Riverside County, California. Studies conducted include 1) performing background research and museum records searches of the project area and vicinity, (2) conducting the paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing. *Client: Power Engineers*

Project Manager/Senior Paleontologist/ Paleontological Resource Specialist, Victorville 2 Hybrid Power Project, San Bernardino County, California (2006- 2009): SWCA provided paleontological resources management services for the Victoriville 2 Hybrid Power Project in San Bernardino County, California. The scope of work included (1) performing background research and museum records searches of the project area and vicinity, (2) conducting paleontogical field survey, and (3) prepaing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing associated with the 250 acre plant site, associated utility lines, and approximately 20 miles of transmission line right-of-way. Although the project construction has since been placed on hold, Ms. Corsetti was approved as Paleontological Resource Specialist by the CEC during the intitial pre-constuction compliance phase. *Client: AECOM*.

Project Manager/Senior Paleontologist, Kings River Conservation District Community Power Plant Project, Fresno, California (2006 – 2008): SWCA provided paleontological resources services in support of an Application for Certification for the Community Power Plant Project in Fresno, California. Studies conducted include 1) performing background research and museum records searches of the project area and vicinity, (2) conducting the paleontogical field survey, and (3) preparing a technical report that includes project-specific mitigation measures to be implemented during the ground disturbing. *Client: Navigant Consulting.*

Paleontological Resource Specialist / Project Manager, Kings River Conservation District Peaking Plant, Fresno County, California (2004-2005): As the project manager and one of the CEC approved Paleontological Resource Specialists for this project, Ms. Corsetti was responsible for overseeing all paleontological tasks associated with the construction of a small peaking plant located in Fresno County, California. Prior to the commencement of project construction, a paleontological resources survey and assessment was performed of the approximately 18-acre project plant site and associated utility lines. A Paleontological monitoring and mitigation program (PRMMP) was designed to identify and salvage scientifically significant paleontological resources and associated data as rapidly as possible in order to prevent construction delays. Additionally, SWCA prepared and implemented the

worker environmental awareness training program for paleontological resources as per the project Conditions of Certification. Paleontological monitoring by SWCA's CEC certified paleontological monitors was performed during the construction of the plant site. *Client: Navigant Consulting for the Kings River Conservation District.*

Paleontological Resource Specialist, Cosumnes Power Project, Sacramento County, California (2003 – 2005): SWCA assisted Sacramento Municipal Utilities District (SMUD) officials with the implementation of the project's Conditions of Certification, as required by the California Energy Commission (CEC) during a major construction effort for a power plant site, a new gas pipeline, and other facilities. SWCA's team of paleontologists designed and implemented worker environmental awareness training program for paleontological resources per the project's Conditions of Certification, performed a field survey and conducted soils testing and paleontological sensitivity analysis, prepared and implemented a Paleontological Resources Monitoring and Mitigation Program for the project. Ms. Corsetti was approved by the CEC as one of the Paleontological Resource Specialists for the project and was responsible for overseeing all paleontological tasks. *Client: Sacramento Municipal Utilities District.*

Paleontological Resource Specialist/ Paleontology Task Manager, Riverside Energy Resource Center, Riverside County, California (2004 - 2005): SWCA was retained by Power Engineers, Inc. to provide support of an application by the Riverside Public Utilities to the California Energy Commission (CEC) for a Small Power Plant Exemption (SPPE) for the Riverside Energy Resource Center (RERC) in the city of Riverside and subsequent paleontological serviced during the construction of the RERC and associated transmission line. As Paleontology Task Manager, Ms. Corsetti was responsible for overseeing paleontological work including (1) museum records searches and literature reviews, (2) reconnaissance field surveys, (3) design and preparation of a Paleontological Monitoring and Mitigation Plan (PRMMP), (4) design and implementation of a workers environmental awareness program, and (5) implementation of monitoring and mitigation services. Paleontological monitoring of paleontologically sensitive geologic units is complete and a final report of findings is underway. *Client: Power Engineers, Inc.*

Paleontological Resource Specialist / Project Manager, Mountainview Power Plant Project; San Bernardino County, California (2002–2005): SWCA provided paleontological monitoring and worker eduction training during the construction of a power plant facility. Job responsibilities include acting as one two designated paleontological resource specialists approved for the project, paleontological resources environmental awareness trainer, field surveyor, project manager, and Technical Report Author. *Client: URS Corporation.*

Paleontological Resource Specialist / Project Manager, High Desert Power Project; San Bernardino County, California (2001–2003): SWCA was contracted by URS Corporation to provide paleontological monitoring and workers awareness training during the construction of a power plant facility. Job responsibilities include acting as one of two designated paleontological resource specialists, paleontological resources environmental awareness trainer, field surveyor, project manager, and technical report author. *Client: URS Corporation.*

Professional Experience

- Office Principal, SWCA Environmental Consultants; Pasadena, California (2009 - Present)
- Office Director/Program Director, Paleontology, SWCA Environmental Consultants; Pasadena, California (2008-2009)
- Program Director, Paleontology, SWCA Environmental Consultants; Pasadena, California (2002–2008)
- Senior Project Manager, Paleontology, SWCA Environmental Consultants; Mission Viejo, California (2001–2002)
- Staff Paleontologist, RMW Paleo Associates, Inc.; Mission Viejo, California (2000–2001)

Professional Affiliations and Committees

- Society of Vertebrate Paleontology
- Society for Sedimentary Geology (SEPM)
- Geological Society of America
- Association for Environmental Professionals

Michael E. Flack, PG, CEG
Senior Hydrologist

Education

BS, Geology, California State University of Northridge

MS, Geology, California State University of Northridge

Years Experience

With AECOM: 15

With other firms: 13

Registrations

Professional Geologist, California

Certified Engineering Geologist, California

Professional Affililations

American Association of Petroleum Geologists

National Groundwater Association

Association of Engineering Geologists

Mr. Flack has more than 25 years of experience in performing water supply assessments and has extensive experience with the California Energy Commission (CEC) water resources group working closely with this group on several solar thermal projects in the last three years. In his capacity as the water resources lead for AECOM solar projects, he has engineered solutions to complex water supply issues on availability and sustainability of the groundwater resource for several solar power projects through the development of numerical modeling scenarios that were acceptable to the CEC and Bureau of Land Management (BLM). Mr. Flack is very familiar with the complex issues surrounding groundwater basins proximal to the Colorado River, and has developed strategic arguments to counter the U.S. Bureau of Reclamation (USBR) proposed accounting surface rule, a proposal that would require federal entitlement and affect the acceptability of the water supply. He has also prepared water offset or mitigation plans and is familiar with various options for mitigation of impacts should they be required. Mr. Flack brings significant experience to the licensing process; experience with evolving CEC and BLM policy and position that has benefited numerous other clientele in the successful completion of solar thermal development in California.

Experience

NextEra Energy Resources, Inc., Beacon Solar Energy Project, California City, California. Project hydrogeologist assigned to evaluate groundwater resources as part of an Application for Certification (AFC) to the CEC in support of a proposed 250-megawatt solar power plant planned for commercial operation in 2011. Project tasks included development of a groundwater basin conceptual model and subsequently a numerical groundwater model (MODFLOW) to determine availability of groundwater to meet project water requirements and evaluate the impacts to groundwater basin storage and water quality for the AFC. Tasks in support of the basin conceptual modeling included conducting several step and constant-discharge a pumping tests, down-hole geophysical and

conductivity logging, developing a database of recent and historic hydrologic and well data, and evaluating groundwater geochemistry. Critical elements for the modeling included development of the basin water balance and recharge. Several analyses of recharge were performed that showed the groundwater basin is in recovery from prior period of overdraft. These analyses provided foundation for the proposed groundwater use, and supported that the project would have less than significant impact to the groundwater basin storage. Additionally, supported the project through all data response and communications to the CEC and provided leadership in the preparation of all water-related permitting such as the report of waste discharge for proposed evaporation ponds and dredge and fill-permit to the Regional Water Quality Control Board and Conditional Letter of Map Revision to Federal Emergency Management Agency.

Solar Millennium, Western Mojave Desert, California. Project hydrogeologist assigned to evaluate soil, geologic hazards and water resources impacts as part of a licensing process through the CEC. Multiple projects are proposing parabolic mirror technology with dry cooling at 250-megawatt increments at three sites within the Mojave Desert. Project responsibilities include negotiation and development of scoping and approach consistent with current CEC and Federal BLM requirements for assessment of impacts. As part of the application process hydrogeologic assessments were performed to evaluate groundwater occurrence, storage and movement and the impacts from the proposed project pumping. Additionally, the studies evaluated the basin water balance and sources of discharge to determine the safe yield within the basin. The projects have also used existing numerical groundwater models developed by the U.S. Geological Survey to evaluate project pumping impacts and effects to basin storage. Two of projects required preparation of an application to the Colorado River Board for entitlement of water under the Law of the River and through the Needles Bank.

Confidential Client, Western Mojave Desert, California. Project hydrogeologist assigned to evaluate soil and geologist hazards and water resource impacts as part of a licensing process through the BLM for a large photovoltaic solar power plant. Responsibilities included development of a groundwater model to evaluate the impacts to the local groundwater basin from the proposed construction and operational, and development of potential water supply alternatives and evaluation of the basin safe yield.

San Luis Rey Municipal Water District, Pala, California. As project hydrogeologist, provided an evaluation of groundwater resources within a small water district in Southern California. In support of the planned development of formerly agricultural properties, the project objectives were to determine storage and sustainable yield for an alluvial groundwater basin. Project tasks included literature review, analytical modeling of storage, and sustainable yield and water balance. In addition, the project included evaluation of alternative management schemes to return

treated wastewater to the aquifer system.

Tronox LLC, Henderson, Nevada. Acted as both the program manager and senior hydrogeologist for the investigation and remediation of a 450-acre active chemical plant south of Las Vegas, in the City of Henderson. The project is under two consent agreements with the Nevada Department of Environmental Protection, one for containment of perchlorate and hexavalent chromium-affected groundwater and a second for assessment and remediation of the sources of chemical impacts in soil that would threaten human health and groundwater. Developed and refined site conceptual model for a complex multi-layer aquifer system, including chemical fate and transport modeling, design and evaluation of three groundwater containment systems for groundwater discharging to Las Vegas Wash, and evaluation of soil remedial alternatives and the site human-health risk assessment. The site soils and groundwater have been impacted by perchlorate, hexavalent chromium, volatile organic compounds, pesticides, metals and radionuclides. Provided senior technical review of all technical deliverables, including Standard Operating Procedures, Quality Assurance Project Plan, soil and groundwater sampling and analysis plans, and remedial investigation and remedial system operation reports.

Richard P. Hamel
Air Quality Meteorologist and Modeler

Education

MS, Atmospheric Science, University of Massachusetts-Lowell

BS, Computer Science, University of Lowell

Years of Experience

With AECOM: 5
With other firms: 18

Technical Specialties

Air Emissions Measurement & Characterization

Air Pollution Control Engineering

Air Quality Compliance Design, Implementation & Management

Atmospheric Dispersion Modeling
Environmental Impact

Assessment & Statements

Geospatial Information Systems

Human Health Risk Assessment

Major Capital Projects Permitting
New Source Review (NSR)

Mr. Hamel is an experienced air dispersion modeler, having performed dozens of air modeling analyses with U.S. Environmental Protection Agency (EPA) preferred air dispersion model, AERMOD, in support of a large variety of permitting activities. He has performed air dispersion analyses for many different types of facilities including coal-fired power plants including fugitive and materials handling emissions, solar power plants, combined-cycle natural gas fired power plants, as well as non-power related facilities such as paper mills and oil refineries. Mr. Hamel is also experienced with deposition and heath risk assessment modeling, as well as the SACTI cooling tower plume analysis modeling.

Mr. Hamel is also an experienced air quality meteorologist, having developed more than twenty meteorological data sets for use in air dispersion modeling exercises with the AERMET, MPRM, and RAMMET meteorological data processors. These data sets were created from a variety of sources including NWS meteorological sites, on-site meteorological towers, and state monitoring stations in numerous states.

He also has over 10 years of experience in high-tech and is a capable web programmer, having developed extranet solution for clients for use as data repositories and information distribution sites.

Experience

Solar Power Projects

Inland Energy, Victorville 2 and Palmdale Hybrid Power Projects, California. Performed air dispersion modeling with AERMOD in support of permitting effort for two new hybrid solar/natural gas power plants. Tasks included:

- Development of on-site and airport meteorological data for used in the Class-II dispersion modeling and health risk assessment.
- Performed National Ambient Air Quality Standards

Regulatory Consulting

Program Management

Professional Affiliations

Air and Waste Management Association

American Meteorological Society

(NAAQS), California Ambient Air Quality Standard (CAAQS), and Prevention of Significant Deterioration (PSD) modeling to demonstrate compliance, using the ozone limiting method (OLM) for determining nitrogen dioxide (NO_2) impacts.

- Determined Particulate Matter (PM)10, PM2.5, and NO_2 total impacts by developing database of hourly and daily backgrounds and matching modeled impacts with concurrent background values.
- Interacted with Mojave Desert Air Quality Management District (AQMD) and Antelope Valley AQMD staff to develop inventory cumulative modeling inventory and executed cumulative modeling for all criteria pollutants consistent with California Air Resource Board (ARB) policy.
- Created sources and performed AERMOD modeling for project construction per ARB rules.
- Developed AFC and PSD Permit Application for both projects.

NextEra Energy Resource, Inc., Beacon Solar Energy Project, California City, California. Managed and performed air dispersion modeling with AERMOD in support of permitting effort for a 250 megawatt solar project near California City. Tasks included:

- Managed modeling staff and aided in class-II modeling effort to demonstrate compliance with all applicable NAAQS and CAAQS, using the OLM for determining NO2 impacts.
- Performed California Energy Commission (CEC) required construction-phase modeling to demonstrate compliance with CAAQS.

Developed responses to CEC Comments after performing additional modeling and research on issues raised by the agency. Aided in completed the formal written responses to these comments.

Solar Millennium, Solar Energy Projects, Mojave Desert, California. Managing the class-II modeling effort for three separate solar projects located in the Mojave Desert. Tasks include:

- Selection of representative meteorological data for each of the three sites based on availability of data, proximity to project location, and similarity in surface characteristics to the project location.
- Development of modeling strategy to meet CEC's requirement to model construction emissions.
- Development of modeling protocol for all Class-II modeling

requirements.

- Modeling visual effects of cooling tower plumes using the SACTI model.
- Delivery of final modeling report for inclusion in the Air Quality section of the Application for Construction (AFC).

Capital Permitting Power Projects

IPA, Coleto Creek, Fannin, Texas. Performed air dispersion modeling with AERMOD dispersion model in support of permitting effort for expansion of existing facility to add an additional coal fired boiler. Tasks included:

- Definition of source characteristics and emissions for combustion sources and fugitive sources including material handling, haul roads, and coal pile erosion.
- Facility-wide dispersion modeling using AERMOD to demonstrate compliance with the NAAQS and PSD increment.
- Texas Effects Screening Levels modeling for non-criteria pollutants.
- Cumulative sulfur dioxide (SO2) modeling using AERMOD including off-site major emissions sources within 50 kilometers of project site. Included permit review of existing and permitted but not yet constructed sources in Texas Commission on Environmental Quality's (TCEQ's) permit database.
- Supported litigation team during contested hearing regarding the draft permit issued by TCEQ.

Enterg, White Bluff Pollution Control Project, Redfield, Arkansas. Performed air dispersion modeling with AERMOD dispersion model in support of permitting effort for flue gas desulfurization scrubber retrofit for two coal fired boilers. Tasks included:

- Definition of source characteristics and emissions for combustion sources and fugitive sources including material handling, haul roads, coal pile erosion, and land fill traffic.
- Development of meteorological data set using AERMET and AERSURFACE pre-processors for AERMOD.
- Facility-wide dispersion modeling using AERMOD to demonstrate compliance with the NAAQS.
- Currently involved in post-application support and response to agency comments.

EME Homer City, Coal-fired Power Plant, Homer City, Pennsylvania. Performed air dispersion modeling for wet scrubber project at Homer City Power Station in Pennsylvania using AERMOD. Developed modeling protocol and report in

support of the permit application process including in-depth justification of appropriateness of meteorological data chosen for project.

Southern Company, Plant Daniel, Escatawpa, Mississippi. Performed air dispersion modeling for wet scrubber project to determine the viability of several possible stack dimension scenarios using AERMOD. As a precursor to the modeling, an extensive study comparing the land-use characteristics of the site to the land-use at the Mobile, Alabama airport data was required using AERSCREEN to demonstrate the appropriateness of the data for use. Performed additional study work to determine the possible effects of stack-tip downwash on close in pollutant concentrations.

Ethanol Projects

Hawkeye Renewables" Menlo, Iowa and Shell Rock, Iowa. Performed air dispersion modeling with U.S. Environmental Protection Agency's (EPA's) AERMOD dispersion model in support of permitting effort for two new 115 million gallon per year ethanol producing facilities. Worked with Iowa Department of Natural Resources to develop air modeling report for permitting process.

Broin Company (now POET Biorefining), Fostoria, Ohio and Marion, Ohio. Performed air dispersion modeling with EPA's AERMOD dispersion model in support of permitting effort for two new 65 million gallon per year ethanol producing facilities. Processed meteorological data using AERMET pre-processor for AERMOD for use in the Class-II dispersion modeling analysis. Developed modeling reports to support permitting process.

Chippewa Valley Ethanol Company (CVEC): Benson, Minnesota. Performed air dispersion modeling to support permit renewal and facility expansion at a 46 million gallon per year ethanol facility. Project included multi-source modeling that included additional facilities in the vicinity of the CVEC plant.

Roy L. Hauger Jr., PE
Program Manager, Soil and Water Resources Specialist

Education

B.S., Civil Engineering, Rice University

Years of Experience

With AECOM: 10
With other firms: 23

Registrations

PE//CA, Registration No: C049161

Roy Hauger has over 30 years of experience in designing and managing remediation programs and supporting construction programs. His remediation experience includes both in-situ and ex-situ technologies at sites impacted by petroleum hydrocarbons, metals, and chlorinated volatile organic compounds. He has prepared Corrective Measures Studies approved by the Department of Toxic Substances Control (DTSC) as well as Remedial Action Workplans approved by the Regional Water Quality Control Board (RWQCB). He has designed, permitted, and managed the installation and operation of groundwater and soil treatment systems and achieved site closure from the Los Angeles, Santa Ana, and Colorado River RWQCBs, as well as Ventura County Environmental Health and Santa Barbara County Fire Departments. His experience also includes preparing Spill Prevention Control and Countermeasures (SPCC) plans and Storm Water Pollution Prevention Plans (SWPPP).

Experience

Inland Energy, Palmdale Hybrid Power Project, Palmdale, California. Prepared a preliminary SWPPP for the construction phase of a hybrid power plant and associated transmission lines.

First Solar, Storm water Modeling of a Solar Farm, California. Managed the storm water modeling of a proposed solar power facility located in an alluvial fan environment. Storm water modeling evaluated mitigation measures to minimize impacts to storm water flows from development using low impact design concepts. Also determine total water requirements for the construction of the project.

Southern California Edison, Proponents Environmental Assessment, California. Prepared the hydrology and water quality sections of the Proponents Environmental Assessment (PEA) for the proposed Alberhill electrical substation in Ventura County and for the proposed Lakeview electrical substation in Riverside County.

Sempra Energy (Southern California Gas Company, Proponents Environmental Assessment, California. Prepared the hydrology and water quality sections of the PEA for an up-grade to the natural

gas compressor station and electrical transmission line for the Aliso Canyon natural gas storage facility in Los Angeles County.

County of San Benito Waste Management, Prepare a Storm Water Pollution Prevention Plan, John Smith Road Landfill, San Benito County, California. Prepared an industrial SWPPP for an operating landfill.

JSP International, SWPPP, San Bernardino, California. Prepared an industrial SWPP and a Storm Water Monitoring and Reporting Plan (SWMRP) for a polystyrene Bead production facility.

Gallade Chemical, Preparation of a SWPPP, Fontana, California. Prepared an industrial SWPPP and a SWMRP for a chemical distribution.

Anadarko Petroleum, Assessment and Restoration of Eight Oil Field Sumps, Santa Maria, California. Managed assessment, permitting, and restoration oversight of oil field sumps. Sumps are now located on residential, commercial, recreational and agricultural properties. Obtained No Further Action approval from Santa Barbara County, Fire Prevention Division, or Site Mitigation Unit for parcels associated with seven of the sumps. Prepared construction SWPPPs for one of these sites.

Sempra Energy (Southern California Gas Company), Integrated Stormwater and SPCC Plans, Southern California. Prepared and certified Integrated SPCC plans for thirty-five operating compressor stations and for five base stations and support facilities located in southern California for a natural gas transmission utility.

Brown & Bryant Task Force, Tank Decommissioning and Excavation Remedial Action, Shafter, California. Completed bid procurement and managed aboveground storage tank decommissioning, as well as prepared Excavation Workplan for remedial action at the Brown & Bryant Shafter California site. This former pesticide formulation facility is under a DTSC Imminent or Substantial Endangerment and Corrective Action Order.

Sara J. Head, QEP
Sr. Program Manager

Education

BS, Atmospheric Sciences, University of California at Davis

Years of Experience

With AECOM: 18
With other firms: 17

Technical Specialties

Air Quality Compliance Design, Implementation & Management

Atmospheric Dispersion Modeling

Environmental Impact Assessment & Statements

Federal, State, Province & Local Regulatory Interface & Negotiation

Impact Mitigation Planning

Major Capital Projects Permitting

New Source Review (NSR) Regulatory Consulting

Program Management for Project Permitting

Project Feasibility, Siting & Planning

Ms. Head is a Vice President of AECOM and has managed environmental and air permitting projects for many facilities across the western U.S., including solar, combined-cycle, and coal-fired power generation. Her experience includes management of solar photovoltaic (PV) projects in the Southwest, as well as many successful California Energy Commission (CEC) licensing projects (solar, combined-cycle and solar-gas hybrids), and other comprehensive power plant environmental permitting projects in Arizona and Nevada. Ms. Head is the Project Manager for the Palmdale Hybrid Power Project (PHPP). She has assisted in obtaining Post-Certification Amendments for several power plants, including Elk Hills Power, Blythe Energy Project, and High Desert Power Project. She served as the CEC Technical Advisor on three proposed solar power projects covering over 12,000 acres for development.

Experience

Solar Energy and Hybrid Solar Projects

Inland Energy, Environmental Permitting and Compliance, California. Project manager of two projects to develop hybrid combined-cycle and solar electric generating plants in Victorville (VV2) and Palmdale (PHPP). Projects involve preparation of an Application for Certification (AFC) to the CEC and Prevention of Significant Deterioration (PSD) permit applications to the U.S. Environmental Protection Agency (EPA), as well as all other local, air district and regional permits. Projects will use reclaimed water for cooling from the local water treatment plants. Section 7 consultation was conducted with the U.S. Fish & Wildlife Service through EPA's PSD permit. California Department of Fish and Game (CDFG) 2081 Incidental Take Permit (ITP) and Streambed Alteration Agreement (SAA) requirements were (for Victorville) and are (for Palmdale) being addressed. The VV2 Project was licensed by the CEC in 2008 and the CEC process for PHPP is on-going. Also managed the completion of many pre-construction compliance plans for the VV2 Project.

Registrations

Qualified Environmental Professional (QEP)

Professional Affiliations

Air and Waste Management Association, Fellow Member

Ventura Co. Air Pollution Control District Advisory Committee, Vice Chair

Publications and presentations

Issues Related to Gas Turbine Startup Emissions Sara J. Head and Robert Fraser, AECOM

Presented at the EUEC 8th Annual Conference on Air Quality, Global Climate Change, and Renewal Energy, January 25, 2005

NextEra Energy Resources, Inc., Environmental Permitting, California. Managed the environmental permitting for the Beacon Solar Energy Project, a 250-megawatt (MW) solar thermal electric generating plant near California City (in Kern County), that will use parabolic trough mirrors. Project involved preparation of an AFC to the CEC, and the ensuing permitting assessment which is functionally equivalent to a California Environmental Quality Act (CEQA) process. The site is over 2,000 acres, and required biological permitting such as a Section 10 Habitat Conservation Plan under the Endangered Species Act, CDFG 2081 ITP and SAA. Permitting also included obtaining a Lot Line Adjustment from Kern County Planning Department (KCPD), as well as working with KCPD on other land use and water use issues. Permits were obtained from Kern County Air Pollution Control District and Lahontan Regional Water Quality Control Board, as well as other required permits. Use of groundwater for power plant cooling was a major issue, and the site has a major earthquake fault running through it.

Solar Millennium, LLC, Environmental Permitting, California. Provided senior technical support for three projects to obtain environmental permits for solar thermal electric generating plants located on federal land in the desert regions of Southern California, including sites in Kern and Riverside Counties. The projects will range in size from 250 to 1,000 MW, and will use parabolic trough mirrors. Projects involve preparation of three AFCs to the CEC, as well as supporting Environmental Impact Statement (EIS) preparation through the U.S. Bureau of Land Management (BLM).

Sempra Energy, Solar Project Environmental Permitting, Arizona, Nevada and California. Managed and assisted with projects to develop solar thermal or PV power plants in three western states:

- In Arizona, assisted with amendments to the Maricopa County Comprehensive Plan to allow for development of a solar project and then preparation of applications for Special Use Permits for solar PV projects. An application for new transmission lines was also provided to the Arizona Corporation Commission. These projects included biological and cultural surveys, assessment of air quality impacts from construction and operation, water use and grading issues. An application for CEC Renewal Portfolio Standards (RPS) certification was prepared and approved.
- In Nevada, assisted with permitting reviews and feasibility assessment for potential solar thermal, hybrid gas-solar and photovoltaic power plants. For the El Dorado Solar facility, assisted with various permits and approvals including biological mitigation plans, storm water, dust control, and CEC RPS certification requirements.
- In California, assisted with preparation of a Plan of Development for permitting a solar project on BLM land.

Confidential Clients, Critical Issue Analysis and Permitting Plans, California, Arizona and Nevada. Assisting several clients to determine the feasibility and permitting requirements to develop solar energy projects in the desert regions of the southwestern U.S. These projects involve both solar thermal and photovoltaic technology. Feasibility with respect to biological and cultural resources, water resources, and land uses are some of the major issues being addressed. Some projects involve development on BLM lands. Several projects involve assisting with due diligence for the purchase of developing solar project in the Southwest. Some projects involve preparing analyses and permitting requirement lists to include in proposals for Power Purchase Agreements as issued by the state utility companies.

Other Power Generation Permitting Projects

High Desert Power Project, Air Permitting and Other CEC Support, California. Managed a project to satisfy all the air quality requirements for a new merchant power plant. The permitting requirements included a PSD permit from EPA Region 9, a local air permit from the Mojave Desert Air Quality Management District (MDAQMD), and a License from the CEC. The project involved development of a strategy to obtain offsets for the project, including obtaining approvals of an interpollutant, interbasin trade of volatile organic compound offsets for oxides of nitrogen emissions. Assistance with hazardous materials (ammonia) handling, Federal Aviation Administration stack height and visible plume analysis, biological impacts, and other topics was also provided. Subsequent to licensing, on-going support has been provided for permit modifications, protocol review, water permitting, reporting and other compliance services

Edison Mission Energy, Offset Strategy Assistance, California. Assisted with the development of a strategy and applications to provide offsets for a peaking facility in the South Coast Air Quality Management District (SCAQMD).

NRG Energy, Permit Amendments, California. Assisted with the amendments to both the SCAQMD air permit and the CEC Final Decision for the El Segundo Repowering Project to revise the source of emission reduction credits/offsets for the project. The amendment included the shut down of existing units at the facility, which required analyses related to all resources as well as air quality.

Sempra Generation, National Environmental Policy Act (NEPA) Support, Mexico and Imperial County, California. For the Termoeléctrica de Mexicali project, assisted Sempra with litigation support related to a challenge of the NEPA document developed by the U.S. Department of Energy (DOE). The judge ruled in favor of the plaintant, and the DOE was required to prepare an EIS for the impacts of the transmission lines within the U.S. that would connect two power plants in Mexico to the power grid, including an assessment of the power plants impacts on ozone and particulate air quality, health risks, and greenhouse gas (GHG) emissions. AECOM

provided consulting and assistance with ozone box modeling to support project impact assessment, as well as expert testimony on ammonia emission transformation, GHG impacts, and review of the EIS. AECOM also prepared a health risk assessment (HRA) that was provided to Argonne Labs, the DOE contractor preparing the EIS, and the HRA was used in the EIS.

Sempra Generation, Compliance Assistance, California. Managed and assisting with projects to assist with post-permitting environmental requirements for the Elk Hills Power (EHP) plant in Kern Co. Tasks have included development of permit modification strategy, variances, acid rain notifications, review of commissioning plans, offset analysis, permit revisions, storm water plans, risk management plans and other consultation. Recently assisted with the development of EHP's Title V permit renewal application.

Sempra Generation, Environmental Permitting, California. Managed a project to prepare an AFC and obtain a license from the CEC for a proposed new combined cycle power plant (the Palomar Energy Project in Escondido). Major issue areas addressed in the AFC included air quality and biological resources, as well as all environmental impacts. Water requirements are met with the use of reclaimed water from the local water treatment plant. Subsequent to licensing, assistance has been provided with permit modifications and other support.

Sempra Generation, Environmental Permitting, Nevada. Managed a project to obtain all environmental permits needed for a new combined-cycle power plant in Southern Nevada. Primary permits included a PSD air permit, water (NPDES) permits and review of potentially impacted biological resources. Subsequently, the permit was modified to add additional equipment, including a solar thermal cooling system and auxiliary boiler. A new permit was obtained when the original permit expired.

Sempra Generation, Environmental Permitting, Nevada and Idaho. Managed two projects to obtain environmental permits, including PSD, NPDES, and landfill permits; obtain County Special Use Permits; and comply with NEPA for a 1,200 MW and a 600 MW coal-fired power plant. Since project linear facilities (transmission lines, rail road, water lines, etc.) crossed BLM land, the BLM was the NEPA lead agency for these projects, which included extensive biological and cultural baseline studies, as well as ambient air quality and meteorological monitoring program. The Best Available Control Technology review included an assessment of Integrated Gasification Combined Cycle technology. The projects were cancelled prior to completion of the environmental studies.

Sempra Generation, Ozone Modeling, Arizona. Provided oversight and coordination of AECOM assistance with ozone modeling requirements and evaluations. For the Mesquite project in Arizona, AECOM provided Urban Airshed Modeling (UAM) to support project permitting.

Sempra Generation, Feasibility Studies, California. Provided oversight for ENSR studies to determine the feasibility of potential project sites. Studies included Phase I due diligence site assessments; surveys to determine the availability of emission reduction credits to use for offsets; water studies to evaluate different options for water supply and discharge including use of contaminated agricultural run-off water, groundwater, underground injection, dry cooling and water swaps with water agencies; and conduct of biological surveys.

Duke Energy North America, Environmental Permitting, Arizona. Managed a project to obtain environmental permits and approvals needed for a new combined-cycle power plant near Phoenix, Arizona. Primary permits included a PSD/Title V air permit and an environmental review under the Arizona Corporation Commission. Many air quality and visiblity models were used including UAM. After permitting was accomplished, permits for an expansion to add two more units were obtained. Tasks also consisted of assisting with compliance assurance during the construction phase. For example, assisted with development of a compliance tracking matrix, review of required plans and protocols, permit modifications, and development of semi-annual compliance reports.

Confidential Power Developer, Feasibility and Critical Issues Assessments, Arizona. Managed projects to review the impact of potential schedule delays and to investigate new equipment at two different coal-fired power projects. Modeling and regulatory assessment was performed to determine the feasibility of the potential changes. Also managed two projects to look at potential sites for coal-fired power plants in two western states. Issues investigated included air permitting, water supply, NEPA compliance and potential for ash disposal issues. The air quality analyses included conceptual modeling using AERMOD and CALPUFF to determine the feasibility of the projects.

Newport Generation, Focused Fatal Flaw Analyses, California. For two sites, one within the SCAQMD and one within Ventura County, managed a project to review potential fatal flaws for expansion of two existing power plant operations. The analyses focused on air quality issues, including the availability of offsets, land use (including California Coastal Commission requirements), and biological resources.

Major Power Producers, Offset Availability Analysis, California. Managed several projects to investigate the feasibility of generating Particulate Matter (PM) 10 emission reduction credits (ERC) from road paving or other means for potential new power plants in the SCAQMD, Bay Area Air Quality Management District, San Joaquin Valley Air Pollution Control District, and San Diego Air Pollution Control District. Potential PM10 ERC sufficient for the projects' needs were identified, however, other ERC options were utilized.

Tuscon Electric Power, Air Permitting, Arizona. Managed a project to obtain air permits for the expansion of the Springerville

Generating Station, a coal-fired power plant. The permitting of two new units was accomplished by netting out of PSD through emissions control of the existing two units. A permitting feasibility assessment related to new operations nearby was also done.

ThermoEcotek, Repowering Project, Fatal Flaw Analysis, California. Managed a project to identify environmental permitting "fatal flaws" for a company that acquired two power plants and planned to repower them. The analysis reviewed potential turbine configurations, probable permitting requirements, including the CEC and/or CEQA requirements, as well as potential local requirements with respect to air, water, noise, building permits, etc. Potential permitting timelines and community issues, such as environmental justice, were also addressed.

FPL Energy, Air Permitting, California. Assisted the Blythe Energy Project (BEP) to obtain various permits from the MDAQMD. For example, assisted with modifications of BEP's PSD permits from MDAQMD, EPA and CEC to increase the emissions allowed during startup; prepared the initial Title V permit application; and prepared an acid rain permit application. Also assisted with noise monitoring.

Mountainview Power Company, Environmental Permitting, California. Managed a project to prepare an AFC and related CEC process for a 1,056-MW expansion of an existing power plant in San Bernardino County. The project included a new 17-mile natural gas pipeline and wastewater connector line. The project completed the CEC process in less than a year from being deemed data adequate.

Sithe Global, Air Permitting, New Mexico. Air task manager for a project to obtain a PSD permit from EPA for a mine-mouth, 1,500 MW coal-fired power plant in New Mexico on the Navajo Nation. Emissions levels and regional haze impacts on the nearby Class I areas, e.g., Mesa Verde and Bandelier, were the major issues for this project. Negotiations with the EPA, four state agencies, and Federal Land Managers from both the National Park Service and Forest Service were extensive in order to resolve the scope of the modeling assessment and obtain the cumulative source inventory.

ALICE E. KARL, Ph.D.

ALICE E. KARL & ASSOCIATES, INC.
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Davis, California 95617
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Alice has been an environmental consultant since 1978 and is the principal for the firm Alice E. Karl & Associates, a certified woman-owned business. She has an extensive knowledge of the arid southwest, having worked continually in the southwestern deserts of the United States and Mexico for over 30 years. She has also completed biological surveys in the coastal ranges of California and the Central and San Joaquin valleys. She is a highly experienced botanist, herpetologist, small-mammalogist, and a recognized desert tortoise authority. She holds permits that allow her to conduct all activities on desert tortoises (e.g., handle tortoises, apply transmitters, collect blood for health analyses) and conduct independent Mohave Ground Squirrel trapping. She also holds a California scientific collecting permit.

Alice conducts field surveys on special-status species, assists with project permitting, conducts research and monitors construction. She regularly organizes and leads large crews to conduct the necessary biological resource surveys for projects, but also is contracted as a reviewer for other firms' biological surveys and reports. Agency coordination and permitting is a critical component of her projects and she works with agency biologists and project proponents in an efficient and scientifically credible manner to develop conservation-oriented, practical and feasible project design and mitigation measures. Research has included long-term and geographically extensive projects on (a) desert tortoise reproduction, translocation, population viability, and habitat relationships; (b) rare plants; (c) vertebrate community relationships; and (d) sampling methods, especially for desert tortoise.

In addition to being an accomplished field biologist, crew chief, and project manager, Alice has worked with agency biologists to develop protocols for desert tortoise surveys, translocation, handling, and other procedures. She has developed a sampling technique for estimating tortoise densities over large areas (TRED), which is currently being employed on large military projects. She has also contributed to several area-wide plans (West Mojave Plan, Northern and Eastern Colorado Desert Plan, Clark County HCP).

MAJOR PROJECT CATEGORIES

- Solar energy development, hybrid and gas-fired power plants, hydropower projects
- Transmission lines and pipelines
- Wind projects
- Waste facilities
- Military
- Mining

MAJOR TASK CATEGORIES

- Special-status species surveys
- Mitigation plan development
- Permitting (ESA, CESA, CEQA, HCPs, BAs, 2081, 1603, 404, SMARA)
- Agency coordination and workshops
- Designated Biologist/Authorized Biologist
- Research
- Construction Monitoring

SPECIAL-STATUS PLANTS and REVEGETATION

- Principal botanist for numerous rare plant surveys in the Mojave, Colorado and Great Basin deserts (California and Nevada), the Tehachapi Mountains, Sonora (Mexico), and the Central and San Joaquin valleys
- Thousands of quantitive plant transects in many desert, subtropical, and forest habitats, using multiple sampling techniques for biomass, density, frequency, vigor, percent cover, etc.
- Extensive knowledge of Mojave and Colorado Desert flora and habitats
- Restoration and revegetation plans and investigations throughout the Mojave, Colorado and Great Basin deserts and northern California
- Wetlands delineation

DESERT TORTOISE

- Recognized desert tortoise authority, with over 32 years experience studying desert tortoises in California, Nevada, Utah, and western Arizona; habitat specialist
- 2 advanced degrees involving desert tortoises
- Holds own handling and research permits from the USFWS and the California Department of Fish and Game
- Author of or contributor to many desert tortoise translocation plans and tortoise permitting documents for solar and other projects
- Designed and implemented three desert tortoise translocation projects, including one of the largest and longest desert tortoise research projects to date - approximately 130 tortoises were telemetered for 10 years to study reproduction, growth, home range, burrow use, dispersal within the context of forage production, size and gender
- Instructor for Desert Tortoise Council Technical Workshops and telemetry use; train construction employee groups and tortoise monitors for construction projects
- Over 25 Bureau of Land Management (BLM)-type trend plots or other mark-recapture plots for population studies and >3000 transects to assess relative densities
- Impacts assessment, mitigation development - numerous projects
- Development of TRED sampling model for region-wide and fine-grained density estimates, used for both the Fort Irwin and the MCAGCC Twentynine Palms base expansions.
- Construction monitoring and development of monitoring protocol
- Contributor to development of methodologies for USFWS survey and handling protocols
- A primary reviewer of USFWS original listing package for desert tortoises
- Contributor to Clark County Habitat Conservation Plan, West Mojave Plan, and Northern and Eastern Colorado Coordinated Management Plan

OTHER WILDLIFE

- Extensive knowledge of southwestern reptile and amphibian fauna
- Extensive small-mammal (rodents) trapping studies in California, Nevada and Arizona, including Mohave ground squirrel and other special-status rodents.
- Survey, research, and permitting experience with the following listed species: Valley elderberry longhorn beetle, Shasta salamander (permitted), Tehachapi slender salamander, San Joaquin kit fox
- Burrowing owl surveys and mitigation
- Numerous bird surveys in desert habitat.
- Mojave ground squirrel - permitted to conduct trapping

PERMITS HELD

- Federal 10(a)(1)(A) for Desert Tortoise (permit in Alice Karl's name) (TE 746058-11)
- State MOU for Desert Tortoise
- California Scientific Collection Permit (SC001368)
- Mohave Ground Squirrel trapping (Authorized field Investigator on W. Vanherweg permit)

EDUCATION

Ph.D., Ecology - University of California, Davis. January 1998. Dissertation: Reproductive strategies, growth patterns, and survivorship of a long-lived herbivore inhabiting a temporally variable environment.

M.S., Biology - California State University, Northridge. 1982. Thesis: The distribution, relative densities, and habitat associations of the desert tortoise, *Gopherus agassizii*, in Nevada.

PROJECT LIST

PROJECT MANAGER and/or SOLE/LEAD BIOLOGIST:

Military Projects

Twentynine Palms Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California. 2009- ongoing. Directed and conducted desert tortoise, special-status animal, and habitat surveys to support impacts analysis for potential base expansion and to revise management on base. Over 3000 TRED tortoise transects plus other surveys. Consultant to NREA, MCAGCC.

Nellis Air Force Base, Las Vegas and Tonopah, California. 2005 - ongoing. Surveys for rare plants on the Nellis North Training Ranges. Consultant to Nellis AFB, Las Vegas, Nevada.

Fort Irwin Expansion Project, Barstow, California. 2002-2003. Authored all desert tortoise sections for the Fort Irwin Expansion Biological Assessment. Initial plan for translocation studies for translocation of several hundred tortoises from the expansion area. Contracted to Charis Corporation, Temecula, California.

Fort Irwin Expansion Project, Barstow, California. 1998-2003. Developed and tested methods to quantitatively assess population levels and impacts to desert tortoises from proposed land expansion. Included mark-recapture plots (1998, 2001, 2002) and new methodology for region-wide, quantitative population assessments. Consultant to Charis Corporation, Temecula, California (1999-2002) and Chambers Group, Irvine, California (1998).

Desert Scimitar (U.S. Marine Corps), 2001. BA for training exercise from Colorado River to *Twentynine Palms Marine Corps Air Ground Combat Center*

Twentynine Palms Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California. 1996-7. Consultant on desert tortoise issues for housing area expansion. Consultant to Merkel and Associates, San Diego, California.

U. S. Air Force MX Missile Project, Coyote Springs Valley, Nevada. Summer, 1981. Intensive field survey (300 transects) of potential facility site to determine the relative densities of the desert tortoise. For Biosystems Analysis, Inc., San Francisco, California.

Miscellaneous Projects

Hyundai Motor America Mojave Test Track, western Mohave Desert, California. 2003 - ongoing. Wrote and/or reviewed permitting documents, including HCP. Wrote and conducted 5-year translocation plan and study. Assessed compensation properties. Consultant to Hyundai Motor America, California City, California.

Sonoran Desert Tortoise Project, Sonora, Mexico. 2005- ongoing. Ecology and genetics study of the desert tortoise in Sonora, Mexico. Field work includes continuous cohort of over 20 telemetered tortoises since 2005, habitat analyses, habitat use analyses, genetics, health assessments.

Unnamed Housing Project, Lancaster, California. 2007. Mohave ground squirrel protocol trapping. Consultant to Sundance Biology, Inc., Paso Robles, California.

San Diego County Water Authority, 2002 - 2005. Technical consultant for biological issues relating to Quantification Settlement Agreement water transfer on Colorado River. Consultant to Greystone Environmental Consultants, Sacramento, California.

Los Angeles County Sanitation District Palmdale Water Reclamation Plant, Palmdale, California. 2003. Agency meetings, survey protocol development and surveys for desert tortoise presence and impacts; surveys for burrowing owl; Mohave ground squirrel trapping; habitat assessment for special-status plants. Consultant to Environmental Science Associates, Oakland, CA.

Los Angeles County Sanitation District, Lancaster, California. 2002. Surveys of proposed pipeline for special-status plants and animals. Special-status plants and animals of greatest concern included desert tortoise, Mohave ground squirrel, burrowing owl, alkali mariposa lily, Lancaster milk-vetch. Consultant to Los Angeles County Sanitation District, Whittier, California.

Burlington-Northern Santa Fe Landfarm Project, Barstow, California. 2001-2003. Assessment of desert tortoise impacts , mitigation development, agency coordination for landfarm closure. Consultant to TRC Environmental Solutions, Irvine, California.

Central Washington University and Cal-Tech, Barstow, California. 1994. Monitoring trenching and closure activities for Endangered Species Act compliance (desert tortoises) on Emerson Fault research project. Consultant to Dr. Charles Rubin, Central Washington University.

U.S. Geological Survey, Landers, California. 1993 and 1994. Monitoring trenching and closure activities for Endangered Species Act compliance (desert tortoises) on Landers' Fault project. Consultant to Dr. David Schwartz, U.S. Geological Survey, Menlo Park, California.

Twentynine Palms Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California. 1993. Tustin military base relocation project. Desert tortoise surveys to determine impacts and mitigation to tortoises from relocation of the base to MCAGCC . Authored several interim reports and co-authored final report to MCAGCC with Ogden Environmental, San Francisco, California

County of San Bernardino Medical Center, San Bernardino, California. September. 1990 General species inventory, and focused surveys for special-status plants and animals at three proposed sites for location of new medical center. Consultant to Higman-Doehle, Inc., Los Angeles, California.

Lake Minerals Corporation, Owens Valley, California. August, 1990 to present. Field surveys to determine tortoise presence at site of soda ash processing plant. Consultant to McClenahan and Hopkins Associates, Inc., San Mateo, California.

Del Webb Housing Development, Palm Desert, California. August, 1990. Assessment of tortoise habitat quality and likelihood of tortoise presence on proposed site. Consultant to Environmental Science Associates, Los Angeles, California.

Miller Housing Development, Palm Desert, California. 1990. Assessment of tortoise habitat and densities at proposed housing site; development of mitigation. For ERC Environmental, San Diego, California

Great Basin Unified Air Pollution Control District, Owens Lake Dust Control Project. December, 1989. Determined impacts to small mammal special-status species on sites

proposed for disturbance. Consultant to McClenahan and Hopkins Associates, Inc., San Mateo, California.

Pacific Agricultural Holdings, Inc., Piute Valley, California. Fall, 1989. Field assessment of tortoise presence on site. Consultant to Pacific Agricultural Holdings, Inc., Fresno, California.

City of Rosamond, California, Expansion. Spring, 1989. Field survey of expansion site to determine impacts to sensitive flora, tortoises, and Mojave Ground Squirrel. Tortoise transects, live-trapping for diurnal rodents. Consultant to CWESA, Sanger, California.

Jet Propulsion Lab Site, Edwards Air Force Base, California. Fall and Winter 1988. Field determination of impacts to tortoises (transects, habitat analyses) from new facility siting. Consultant to WESTEC Services, San Diego, CA.

City of Ridgecrest Off-Road Vehicle Park, Searles Valley, California. January to March 1988. Field determination (transects, habitat analyses) of impacts to local desert tortoise populations from siting of proposed park. Consultant to CWESA and Saito Associates, Fresno, California.

Bullhead City Airport Expansion, Laughlin, Nevada. October, 1987. Assessment of potential impacts to the desert tortoise from expansion of the Bullhead City Airport. Transects, habitat analyses. Consultant to Heron, Burchette, Ruckert, and Rothwell Washington, D.C.

U.S. Borax and Chemical Co., Boron, California. May, 1986. Field assessment of impacts to sensitive flora and fauna on proposed Cogeneration II facility. Consultant to Dames and Moore, Santa Barbara, California.

Propeace, Inc., Victorville, CA to Nevada. March, 1986. Assessment of impacts to wildlife and development of mitigation on proposed route of peace march in the Mojave Desert portion of route. Consultant to Propeace, Inc., Los Angeles, California.

Utilities and Transportation (Power Plants, Transmission Lines, Pipelines, Solar or Wind Facilities, Telecommunications, Railroads)

Genesis Solar Generating Facility, Blythe area, California. 2007 - ongoing. Directed and conducted all biological surveys for permitting. Lead permitting biologist with Tetra Tech through all phases of California Energy Commission permitting process (hearings and workshops, preparer and/or reviewer of all plans and documents) and permits with Fish and Wildlife Service and U.S. Bureau of Land Management. Consultant to Tetra-Tech, Inc., Irvine, California.

Eagle Mountain Pumped Storage Project, Desert Center, California. 2007-ongoing. Directed and conducted all biological surveys for permitting. Lead permitting biologist with GEI through all phases of FERC, USFWS, and BLM permitting processes (meetings, preparer and/or reviewer of all plans and documents) . Consultant to Eagle Crest Energy, Palm Springs, California.

*Abengoa Mojave Solar Project, w*estern Mojave Desert, California. 2008 - ongoing. Advisory role: reviewer and advisor for all biological permitting and mitigation documents; direction to company conducting mitigation (AECOM). Participant in hearings and workshops. Wrote desert tortoise translocation plan. Consultant to AECOM, Camarillo, California.

Solar Millennium, Blythe, Palen and Ridgecrest Solar Projects. 2009-ongoing. Advisory role: reviewer and advisor for desert tortoise, Mojave fringe-toed lizard and other permitting and mitigation documents. Participant in hearings and workshops. Consultant to AECOM, Camarillo, California.

Palmdale Hybrid Power Project, Palmdale, California. 2008 - ongoing. Advisory role: reviewer and advisor for biological permitting. Consultant to AECOM, Camarillo, California.

Victorville II Hybrid Power Project, Victorville, California. 2007 - 2009. Advisory role: reviewer and advisor for all biological permitting and mitigation documents; direction to company conducting mitigation (AMEC). Participant in hearings and workshops. Consultant to AECOM, Camarillo, California.

Beacon Solar Energy Project, western Mojave Desert, California. 2007 - 2009. Advisory role: reviewer and advisor for all biological permitting and mitigation documents; direction to company conducting biological surveys (AECOM). Conducted field surveys to ssess compensation properties and alternative routes. Consultant to AECOM, Camarillo, California.

Southern California Edison Palo Verde-Devers II Transmission Line, Colorado River to Devers, California. 1985, 1987, 1988, 2002, 2003, 2004, 2005, 2007. Surveys of proposed transmission line for special-status plants and animals; technical reports. Consultant to: E. Linwood Smith and Associates, Tucson, Arizona (1985-8); EPG Inc., Tucson, Arizona (2002-4; 2007); Tetra-Tech, Inc., Irvine, California (2005).

Blythe Energy Project 230 kV Transmission Line, Blythe to Desert Center, California. 2004 and 2005. Surveys of proposed transmission line alternatives, for special-status plants and animals; technical reports. Consultant to Tetra-Tech, Inc., Irvine, California (2005).

Blythe Energy Project, Blythe, California. 2000 - ongoing. Designated biologist for proposed power plant, with attendant duties including surveys; biological technical reports; B.A.; AFC assistance; development of mitigation (BRMIMP), monitoring, and education programs (WERP); implementation of mitigation measures; agency coordination; public hearings; and general document reviewer. Special-status plants and animals of greatest concern included desert tortoise, burrowing owl, Harwood's milk-vetch. Consultant to Greystone Environmental Consultants, Sacramento, California (2000-2002), Blythe Energy, LLC (2003 to present).

Desert Southwest Transmission Project (Imperial Irrigation District) Blythe to Niland and Blythe to Devers, California. 2000-2002, 2005. Surveys of multiple, proposed transmission lines for special-status plants and animals, technical reports, EIR. Consultant to: Greystone Environmental Consultants, Sacramento, California (2000-2002); Tetra-Tech, Inc., Irvine, California (2005).

Moapa Power Project, Las Vegas, Nevada. 2001. Initial surveys for special-status plants and animals for proposed power plant, transmission line and pipeline. Consultant to URS Corp, Santa Barbara, California.

Ocotillo Power Project, Palm Springs, California. 2000-2001. Surveys and biological technical report for special-status plants and animals for proposed power plant, transmission line and pipeline. Consultant to URS Corp, Santa Barbara, California.

Imperial Irrigation District, Blythe to Desert Center, California. 2000. Surveys for special-status plants and animals for proposed transmission line upgrade. Consultant to Greystone Environmental Consultants, Sacramento, California.

Enron Pastoria, Tejon Ranch (Bakersfield), California. 1999-2001. Surveys, biological technical report, and AFC preparation for special-status plants and animals for proposed power plant, transmission line and pipeline. HCP preparation for San Joaquin kit fox. Consultant for CEC hearings. Consultant to URS Corp, Santa Barbara, California.

Enron Antelope Valley, Victorville, California. 1999-2001. Surveys and biological technical report for special-status plants and animals for proposed power plant, transmission line and pipeline. Consultant to URS Corp, Santa Barbara, California.

PG&E Generating Company Harquahala Power Project, Toquop, Arizona. 1999-2000. Surveys and biological technical report for special-status plants and animals for proposed power plant and transmission pipeline. Consultant to URS Corp -Dames and Moore, Phoenix, Arizona.

Santa Fe Pacific Pipeline Company, Concord to Colton Pipeline, Mojave to Adelanto, California. Spring 1995. Surveys for special-status plants, desert tortoises, and Mojave Ground Squirrels (CHIEF protocol); project leader. Consultant to Woodward-Clyde Consultants, San Diego, California.

Harper Lake Company, San Bernardino County, California. 1994. Re-evaluation of and assistance with position paper on primary compensation measures for LUZ Harper Lake solar project. Consultant to ENSR, Fort Collins, Colorado.

Santa Fe Railroad Company, San Bernardino County, California. Spring 1994. (1) Monitoring construction for Endangered Species Act compliance (desert tortoises) on bridge upgrades and (2) educational presentation to Santa Fe employees. Consultant to Environmental Solutions, Inc., Walnut Creek, California.

Western Area Power Administration, Parker to Yuma, California. 1994. Led large crew to survey transmission line for determining impacts to desert tortoises, special-status plants, birds, amphibians, and mammals from future transmission line upgrades. Consultant to Woodward-Clyde Consultants, Denver, Colorado.

Mojave Pipeline Operating Company, Mojave Desert, California. 1993. Survey of five proposed compressor station sites for desert tortoise impacts. Consultant to CWESA, Sanger, California. Report submitted to Woodward Clyde Associates, Denver, Colorado.

Mojave Pipeline Operating Company, Kramer Junction, California. 1992-93. Led large crew to survey proposed pipeline from Kramer Junction to Inyokern for impacts to desert tortoises, special-status plants, and Mojave ground squirrels. Consultant to CWESA, Sanger, California. Report submitted to Woodward Clyde Associates, Denver , Colorado.

Lake Minerals-Vulcan Mine Railroad Upgrade, Searles, Indian Wells, and Owens Valley, California. 1991. Desert tortoise surveys along existing railroad to determine future impacts to desert tortoises from upgrade of railroad. Report submitted to McClenahan and Hopkins, San Mateo, California.

U. S Ecology Radioactive Waste Facility, Beatty, Nevada. August 1990. Survey of proposed power line route to radioactive waste site for impacts to tortoises.

Mojave Pipeline Project, Toquop, Arizona to Bakersfield, California. Spring, 1989-90. Lead botanist and wildlife biologist for species of concern in the Mojave Desert and Tehachapi Mountains portion of line. Included: field surveys and agency meetings; development of mitigation and relocation techniques for tortoises and training program for field observers;

development of portions of Environmental Quality Assurance Program for construction phase. For CWESA, Sanger, California, and Woodward Clyde Consultants, Denver, Colorado.

Southern California Edison Victorville/Kramer High Voltage Transmission Line. Spring 1990. Directed field study to determine tortoise abundance along proposed route. Consultant to ERC Environmental, San Diego, California.

AT&T Fiber Optics Cable Route, southern Nevada. 1990. Field survey of route to determine relative tortoise abundance, impacts on tortoise populations, and appropriate mitigation from burial of cable. Also involved relocation of tortoises and training of field personnel during construction. Consultant to ENSR, Fort Collins, Colorado.

Los Angeles Department of Water and Power Telecommunications Network Project, Los Angeles Basin, California. Winter and Spring, 1989. Field survey of proposed microwave facility sites in mountains surrounding the Los Angeles Basin to determine impacts to wildlife and botanical species of concern. Consultant to Higman Doehle, Inc., Los Angeles, California.

AT&T Fiber Optics Line, Victorville, California to Las Vegas, Nevada. Fall, 1988 to Winter, 1989. Field survey of route to determine relative tortoise abundance, impacts on tortoise populations, and appropriate mitigation from burial of cable. Also involved relocation of tortoises and training of field personnel during construction. Consultant to ENSR, Fort Collins, Colorado.

Luz Engineering, Kramer Junction and Harper Lake, California. Spring, 1987 to 1990. Led large crew to assess tortoise densities and habitat quality on relocation site for solar generating facility; density analyses and habitat assessments on facility expansion sites and relocation of tortoises during construction. Consultant to CWESA, Sanger, California, and ENSR, Fort Collins, Colorado.

U.S. Telecom, Banning to Blythe, California- May, 1986 - Field assessment of impacts to special-status plants and fauna along proposed route. Consultant to E. Linwood Smith and Associates, Tucson, Arizona.

Los Angeles Department of Water and Power, Intermountain Power Project (IPP), Nevada-Utah. July, 1982 to August, 1985. Field determination of impacts to the desert tortoise (transects), development of mitigation procedures, and implementation of mitigation along two routes of the HVDC Transmission Line in southern Nevada and southeastern Utah. Also, monitoring of sensitive flora and tortoises during construction. Consultant to E. Linwood Smith and Associates, Tucson, Arizona.

Los Angeles Department of Water and Power, Sylmar-Celilo (HVDC) Transmission Line Upgrade, Owens Valley, California. July, 1984 to December, 1987. Field determination of impacts to special-status flora and wildlife and development of mitigation procedures along the line from Sylmar, California north to Nevada. Construction monitoring and crew education. Consultant to Applied Conservation Technologies, Inc., Newport Beach, California.

Mines and Aggregate Operations:

Ballast Rock Project, Hinkley, California. 2002- continuing. Special-status species impacts assessments, surveys. Special-status plants and animals of greatest concern included desert tortoise, Mohave ground squirrel, burrowing owl, chuckwalla, Mojave monkeyflower and Barstow woolly sunflower. Consultant to Resource Design Technology, Inc., Folsom, California.

S and V Cinder Mine, Big Pine, California. 2002. Baseline, quantitative vegetation surveys for SMARA compliance. Consultant to Resource Design Technology, Inc., Folsom, California.

Lehigh South (Calaveras) Cement (limestone, shale), Shasta County, California. 1998, continuing. Field surveys, biological impacts assessment, reclamation plans, Shasta salamander 2081, Shasta salamander research, revegetation. Consultant to Resource Design Technology, Inc., Folsom, California.

Carone Properties (hard rock), Napa County, California. 2000, continuing. Field surveys, biological impacts assessment, California red-legged frog issues. Consultant to Resource Design Technology, Inc., Folsom, California.

RMC Lonestar (aggregate), Tulare County, California. 1997, continuing. Biological inventory and impacts assessment; Valley Elderberry Longhorn Beetle surveys; wetlands issues; biological portion of EIR. Consultant to RMC Lonestar, Pleasanton, California, and Resource Design Technology, Inc., Folsom, California.

RMC Pacific Materials (hard rock), Fresno, California. 1999, continuing. Field studies, impacts assessment. Consultant to Resource Design Technology, Inc., Folsom, California.

Lehigh South (Calaveras) Cement (limestone), Tehachapi, California. 1999, continuing. Field studies, impacts assessment. Consultant to Resource Design Technology, Inc., Folsom, California.

Last Chance Sand and Gravel (aggregate), Beatty, Nevada. 1998-9 Biological consultant for all phases of project. Surveys for desert tortoise, special-status plants, mammals, reptiles, birds. Consultant to Bill Marchand (operator), Beatty, Nevada.

San Benito Supply (aggregate). 1997-present. Vegetation survey to determine baseline conditions for SMARA reclamation compliance; developed revegetation plan. Consultant to Lilburn Corporation, San Bernardino, California, and Resource Design Technology, Inc., Folsom, California.

M&T Chico Ranch (aggregate), Butte County, California. 1997-present. Wrote biological portion of EIR. Consultant to Resource Design Technology, Inc., Folsom, California.

Granite Construction Co. (aggregate), Whitewater, California. 1997. General species inventory; surveyed for desert tortoises, special-status plants, mammals, reptiles, birds. Consultant to Lilburn Corporation, San Bernardino, California.

Teichert Aggregates (aggregate), Esparto, Yolo County, California. 1996. Wrote biological portion of EIR. Consultant to Lilburn Corporation, Folsom, California.

Teichert Aggregates (aggregate), Woodland, Yolo County, California. 1996. Wrote biological portion of EIR. Consultant to Lilburn Corporation, Folsom, California.

Cache Creek Aggregates (aggregate), Yolo County, California. 1996. Wrote biological portion of EIR. Consultant to Lilburn Corporation, Folsom, California.

Asphalt Construction Company (aggregate), Ridgecrest, California. 1995. Vegetation surveys to determine baseline and regrowth conditions for SMARA compliance. Consultant to Lilburn Corporation, Folsom, California.

Castle Mountains Gold Mine (mineral), San Bernardino County, California, 1995, 1996. Assessment of desert tortoise impacts from proposed expansion (field surveys, habitat analysis). Also included re-evaluation of existing mitigation and compensation measures. Consultant to Lilburn Corporation, Folsom, California.

Santa Fe Pacific Gold (mineral), Glamis, California. 1994. (1) Examination of potential drilling sites for desert tortoise impacts (field surveys) and (2) developed proposal to assess remaining tortoise habitat on mine site. Consultant to Santa Fe Pacific Gold Corporation, Reno, Nevada.

Goldfields Mining Company (mineral), Brawley, California. 1991-92. Field surveys and habitat analysis of gold mine site. Co-authored Biological Assessment. Developed mitigation
plan and impacts studies. Led large crew for desert tortoise clearance surveys. Trained core group of facility employees in tortoise handling. Consultant to Environmental Solutions, Inc., Irvine, California.

Cactus Gold Mine (mineral), Mojave, California. August, 1990. Assessment of tortoise presence on site of heap leach pad extension. Consultant to McClenahan and Hopkins Associates, Inc., San Mateo, California.

Waste Facilities

Los Angeles County Sanitation Districts Mesquite Regional Landfill, Brawley, California. 2004 - 2008. Developed approximately 18 mitigation plans for construction and operations phases of landfill to ensure that the project remains in compliance with all permits. Conducted baseline biological surveys for identification of project impacts, including quantitative plant surveys, small-mammal trapping, exotic weeds, quantitative and qualitative habitat monitoring and revegetation; developed and directed other baseline surveys on birds and ravens. Conducted tortoise clearance of 1800+ acres. Planned and conducted translocation study for desert tortoises. Co-produced Worker Environmental Awareness Program video. Consultant to Resource Design Technology, Inc., Folsom, California.

Arid Operations Mesquite Regional Landfill, Brawley, California. 1992 to 2000. Led large crew to conduct desert tortoise surveys for determining impacts and mitigation to tortoises from construction and maintenance of proposed landfill and associated rail spur. Co-authored Biological Assessment. Expert witness to address activists' concerns. Developed research program (mitigation) to track ecosystem health effects from landfill development. Consultant to Environmental Solutions, Inc., Irvine, California; Arid Operations, El Centro, California, and Resource Design Technology, Inc., Folsom, California.

NORCAL Sanitary Landfill, Victorville, California. Spring, 1997. General species inventory on expansion area; special surveys for desert tortoises, special-status plants, mammals, reptiles, birds. Consultant to Lilburn Corporation, San Bernardino, California.

NORCAL Sanitary Landfill, Landers, California. Spring, 1997. General species inventory on expansion area; special surveys for desert tortoises, special-status plants, mammals, reptiles, birds. Consultant to Lilburn Corporation, San Bernardino, California.

U.S. Ecology/California Department of Health Services Low-level Radioactive Waste Facility, Ward Valley, California, March. 1987 to 2001. Determined impacts to and developed mitigation for desert tortoises in association with construction and maintenance of proposed facility. Developed and conducted a ~10 year, continuous research project on tortoise translocation that focused on effects to reproduction, movements, physiology and mortality. Study cohort included ~150 radiotelemetered tortoises. Principal author of two biological

assessments. Reviewer of numerous project opponents' papers and author of response documents. Consultant to U.S. Ecology, Rocklin, California.

RAIL-CYCLE (Waste Management of North America, Inc. and the Atchison, Topeka, and Santa Fe Railway Company). 1994, 1997. Expert witness for biological impacts at County of San Bernardino hearings for proposed landfill. Consultant to Waste Management of North America, Inc., Pasadena, California.

RAIL-CYCLE, Amboy, California, 1991 - Led large crew for desert tortoise surveys to determine impacts and mitigation to tortoises from construction and maintenance of proposed landfill. Report submitted to Ecological Research Services, Claremont, California and Jacobs Engineering, Pasadena, California.

Yucca Mountain Nuclear Waste Project, Nevada Test Site, Nevada. Fall 1989-90. Determination of tortoise abundance, distribution and habitat associations on proposed site of high-level nuclear waste. With Environmental Science Associates, San Francisco, California

Hidden Valley Resources Toxic Waste Disposal Facility, Newberry Springs, California. June to September 1988. Determination of impacts to and mitigation for desert tortoises from construction and maintenance of facility. Transects and habitat analyses. Consultant to J&M Land Restoration, Bakersfield, California.

Non-Military Government Contracts:

U.S. Army Corps of Engineers Construction Engineering and Research Laboratory (CERL). Spring 2003. Trained biologists in desert tortoise telemetry techniques, handling, and behavior for tortoise activity project near Barstow, California. Contacts: Mr. Andrew Walde and Dr. Larry Pater.

Joshua Tree National Monument, Twentynine Palms, California. 1987-88. Assessed status of the desert tortoise throughout the monument (transects, habitat analyses); developed relocation techniques and assessed sites for tortoises turned in to headquarters. Contact: Dr. Jerry Freilich.

Bureau of Land Management, Las Vegas, Nevada. June to October, 1987 (employee). Developed new method for estimating tortoise densities from transects; led team to estimate tortoise densities from transects throughout southern Nevada; developed habitat assessment technique from quantitative habitat analyses. Supervisor: Sidney Slone.

Nevada Department of Wildlife, Las Vegas, Nevada. Spring, 1984 to 1989. Development of a comprehensive, computerized data base of locations and habitat associations of all vertebrate taxa in Nevada through field, literature, and museum collections' surveys. Field research included live-trapping of all taxa, quantitative censuses of birds, rodents, and carnivores, statistical analyses, and development of baseline research methods for the Department of Wildlife. Contract No. 84-33.

Bureau of Land Management, Riverside, California. March to August, 1980. Independent, 60-day quantitative and qualitative study of a population of desert tortoises in eastern California. Included extensive analysis of the site's vegetation. Technical report emphasized the relationship of primary production, disturbance, and geo-characteristics to the population demographics of the desert tortoise in this area. Contract No. CA-060-CTO-3.

Bureau of Land Management, Las Vegas, Nevada. March, 1979 to August, 1982. Sole project to date to determine the distribution and relative densities of the desert tortoise in Nevada; also delineated habitat requirements of the tortoise in Nevada. Solitary research involving

foot-transecting over 450 miles in Clark, Lincoln, and Nye counties. Also included qualitative and quantitative examinations of three populations of tortoises similar to those mentioned above. Contract No. YA-512-CT9-90.

Bureau of Land Management, Riverside, California. Spring, 1979. Independent, 60-day quantitative and qualitative study of a population of desert tortoises in the western Mojave Desert. Included aforementioned aspects. Contract No. CA-960-CT9-106.

Bureau of Land Management, Riverside, California. Spring, 1978. Independent 30-day quantitative and qualitative study of population of desert tortoises in eastern San Bernardino County, California. Included aforementioned aspects. Contract No. CA-060-CT8-000042.

California Department of Fish and Game, Chino, California. June to December, 1978 - Independent, foot-transecting of over 400 miles of the Mojave and Colorado deserts in California to assist in the determination of the status of the desert tortoise in California. Additional study of pupfish (*Cyprinodon maculatus*) in the Salton Sea, California.

ASSOCIATE PROJECT BIOLOGIST:

Mojave Ground Squirrel Behavioral Project. 2003. Trapping and telemetry with Drs. Phil Leitner and John Harris near Ridgecrest, California.

Eagle Mountain Landfill, Desert Center, California. 1996. Desert tortoise surveys on proposed site. Consultant to Circle Mountain Consultants, Wrightwood, California.

City of Rosamond General Plan. 1992. Trapping ssessment of Mohave Gound Squirrel population status. Consultant to CWESA, Sanger, CA.

Clark County Desert Tortoise Habitat Conservation Plan. 1990-91. Reviewer and partial author of HCP and member of biological technical team; also included field assessments of tortoise habitat quality. Consultant to RECON, San Diego, California.

Desert Tortoise Council. 1990-present. Requested by Council to present techniques for finding tortoises, identifying sign and analyzing data to biologists, developers, and consultants at annual techniques workshop.

American Motorcycle Association/U.S. Fish and Wildlife Desert Tortoise Listing. 1989-90. Review of U.S. Fish and Wildlife Service's basis for Emergency Endangered Listing of the desert tortoise. Examination of all available data, both published and unpublished, to analyze status of the desert tortoise. Draft report heavily cited by U.S. Fish and Wildlife as support for their final listing determination. Subcontracted to Biosystems Analysis, Inc., Tiburon, California.

Salt River Project, Quemado, New Mexico. September, 1985, 1987. Determination of impacts to vegetation and evaluation of re-vegetation success (quantitative vegetation transects) from mining coal reserves. In association with E. Linwood Smith and Associates, Tucson, Arizona.

Sonora Mining Corporation, Sonora, California. Fall, 1986. Assessment of impacts to fish populations (electro-shocking)in Woods Creek, from mining operations. CWESA, Sanger, California.

UNOCAL Platform Irene Project, Lompoc, California. September, 1986. Monitoring of pipeline construction for sensitive wildlife and floral issues. CWESA, Sanger, California.

Southern California Edison, Kingman, Arizona. May, 1986. Botanical survey along proposed transmission line route; Kingman, Arizona to Boulder City, Nevada. Biosystems Analysis Inc., Santa Cruz, California

Belridge Cogeneration Project, Bakersfield, California. Spring, 1985. Field survey of the blunt-nosed leopard lizard (Gambelia silus) and analysis of vegetation. CWESA, Sanger, California.

CWESA , Sanger, California- September, 1984. Field survey of the blunt-nosed leopard lizard in the San Joaquin Valley, California, to determine population dynamics and ecology.

U.S. Forest Service, Klamath Forest, California. Summer, 1983. Project to determine the population dynamics, behavior, and effective control techniques of pocket gophers (Thomomys bottae) in red fir clearcuts. Field work included use of radio telemetry and live trapping. Walter E. Howard, U.C., Davis.

Southwest Biological Associates, Encinitas, California. Winter, 1978. Literature search on the herpetofauna of central and southern California.

Bureau of Land Management, Riverside, California. Summer, 1978 - Field study of the effects of grazing and urbanization on reptiles at two Mojave Desert sites.

EDUCATIONAL EMPLOYMENT:

Collector and preparer, Museum of Vertebrate Zoology, Wildlife and Fisheries Biology, University of California, Davis, California. 1983-1985 - Included trapping, preparation (skeletal and study skin preparation, live-pose taxidermy, freeze-drying), and cataloguing of specimens.

Teaching Assistant, U. C. Davis. 1983-85. Courses in wildlife ecology and museum science.

Teaching Assistant, California State University, Northridge. September, 1981 to June, 1982. Courses in general biology, physiological ecology and local California flora and fauna.

PUBLICATIONS AND PRESENTED PAPERS (not including technical reports and documents associated with projects):

Karl, A. 1980. The distribution and relative densities of the desert tortoise, *Gopherus agassizi,* in Nevada. *In:* K. Hashagen, ed., Proceedings of the 1980 Desert Tortoise Council Symposium, Riverside, California. Pp 75-87. (Paper also presented.)

Karl, A. 1981. The distribution and relative densities of the desert tortoise, *Gopherus agassizi,* in Nevada. Part II. *In:* K. Hashagen, ed. Proceedings of the 1981 Desert Tortoise Council Symposium, Riverside, California. Pp76-92. (Paper also presented.)

Karl, A. and E. Smith. 1984. - Densities of and impacts to the desert tortoise, *Scaptochelys agassizii,* along the proposed 500 kv D.C. Intermountain Power Project Transmission Line in Nevada and Utah. Paper presented at the Desert Tortoise Council Symposium, Lake Havasu, Arizona.

Karl, A. 1994. Reproduction in desert tortoises - ecological and evolutionary perspectives. Paper presented at both the 1994 Desert Tortoise Council Symposium, Las Vegas, Nevada and the American Society of Ichthyologists and Herpetologists Meetings, Los Angeles, California.

Karl, A. 1995. Indirect censusing methods for desert tortoises. Paper presented at an invitational workshop on censusing desert tortoises. Reno, Nevada.

Karl, A. 1997. Factors affecting reproduction of desert tortoises and resultant implictions for management. Paper presented at the 1997 Desert Tortoise Council Symposium, Las Vegas, Nevada

Karl, A. 1997. Reproductive strategies of the desert tortoise. Paper presented at the 1997 American Society of Ichthyologists and Herpetologists Meetings, Seattle, Washington.

Karl, A. 1998. Growth patterns of the desert tortoise in an East Mojave population. Paper presented at the 1998 Desert Tortoise Council Symposium, Tucson, Arizona.

Karl, A. 2002. Revised techniques for estimating desert tortoise abundance in the Fort Irwin National Training Center Expansion Area in 2001 and the results of those studies. Paper presented at the 2002 Desert Tortoise Council Symposium, Palm Springs, California.

Karl, A. 2004. Drought effects on the desert tortoise and population recovery. Paper presented at the 2004 Desert Tortoise Council Symposium, Palm Springs, California.

Karl, A. 2005. Revised Techniques for Estimating Desert Tortoise Abundance in the Fort Irwin National Training Center Expansion Area in 2001 and the Results of Those Surveys. Paper presented at the 2005 Western Section of the Wildlife Society Meetings, Sacramento, California.

Karl, A., Ma. Cristina Melendez Torres, Cecil R. Schwalbe, Mercy Vaughn, Philip C. Rosen, Daren Riedle and Lisa A. Bucci. 2006. The Morphologically Distinct Sinaloan Desert Tortoise. Paper presented at the 2006 Desert Tortoise Council Symposium, Tucson, Arizona.

Freilich, J., R. Camp, J. Duda and A. Karl. 2005. Problems with sampling desert tortoises: a simulation analysis based on field data. J. Wildl. Manage. 69(1):45-55.

MEMBERSHIPS:

California Native Grass Association
California Native Plant Society
Southern California Botanists Society
Desert Tortoise Council
Society for the Study of Amphibians and Reptiles
Society for Ecological Restoration
The Wildlife Society

Russell Kingsley, CPP
Air Quality Discipline Lead

Education

B.S., Chemical Engineering, University of California, San Diego

Years of Experience

With AECOM: 11
With other firms:15

Technical Specialties

Air Permitting

Process Engineer

Environmental Auditing

Environmental Compliance

Professional Registrations and Affiliations

Certified Permitting Professional, South Coast Air Quality Management District

Mr. Kingsley has over 20 years of experience in managing comprehensive and complex environmental assessments of energy, industrial, and other projects, as well as preparing water resources, and hazardous materials assessments, and facilitating key stakeholder and regulatory agency coordination. Mr. Kingsley has a unique skill set that includes both an air quality and engineering background, which results in effective management of complex integrated projects. He recently served as AECOM's project manager for the preparation of a Petition to Amend application for the El Segundo Power Redevelopment Project. He also managed California Environmental Quality Act (CEQA) documents for five peaker plants proposed in southern California by Southern California Edison. He also has been involved in AECOM's Applications for Certification (AFCs) for the Palomar Energy Project, Victorville 2, Palmdale Hybrid Power Project, the CalEnergy Black Rock 1, 2, 3 Geothermal Power Project Major Amendment, and the Blythe Solar Energy Project, as well as air quality task manager for three recent solar thermal AFCs. He has evaluated the air impacts from installation of six combustion turbines and Selective Catalytic Reduction (SCR) on existing boilers at Los Angeles Department of Water and Power power plants.

Experience

Inland Energy, Applications for Certification for Victorville 2 and Palmdale Hybrid Power Projects, California. Prepared the hazardous materials section of the California Energy Commission (CEC) AFCs for the Victorville 2 Hybrid Power Project which includes a conventional gas turbine-based combined cycle power plant with a 50 megawatt (MW) solar collector/concentrator power plant. Continuing to support the project by evaluating the proposed mitigation measures, and preparing responses to public comments on behalf of the Mojave Desert Air Quality Management District (MDAQMD) for the Determination of Compliance for the project air permit.

For the Palmdale Hybrid Power Project, have assisted with the preparation of the air quality impact analysis and an air permit

application as well as addressing follow-up data requests and comments.

Confidential Client, AFC and Air Permit Application for Solar Energy Power Plant, California. Prepared the air quality and hazardous material sections of a CEC AFC and the air permit application for a 250 MW solar power plant in California. Work involved evaluation of the engineering design of the solar collector/concentrator plant design to determine hazardous material usage, air emission points and air emission estimates, in addition to document preparation.

Confidential Client, Air Permit Application for Solar Energy Power Plant, Nevada. Prepared the air permit application for a 180 MWe solar energy plant in Clark County, Nevada. Work involved evaluation of the engineering design to determine emission points, preparation of the process description, preparation of air emission estimates and regulatory compliance evaluation. The application has not yet been submitted because the project is currently on hold.

Southern California Edison, CEQA Initial Study/Mitigated Negative Declaration for Four Peaker Power Plants, California. Project Team Leader for the preparation of four CEQA Initial Study / Mitigated Negative Declarations (IS/MND) for four peaker power plants in Southern California. The peaker plants employed 45 MW combustion turbines. In addition to project management, prepared the project descriptions, air quality, hazardous materials, and energy sections of the ISs, coordinated the use of five subcontractors, and provided overall quality control for the project. The four IS/MNDs were prepared in under three months from project kick-off, and certified by the South Coast Air Quality Management District (SCAQMD), the lead agency, six weeks following submittal.

Constellation Power, Audit, California. Conducted a comprehensive review of current air permit requirements in support of certification of the initial Title V application for the High Desert Power Project. The review included the risk management plan as well as CEMS data, source tests, and other requirements of the MDAQMD and U.S. Environmental Protection Agency (EPA) Prevention of Significant Deterioration (PSD) permits. Other assistance at this facility has included preparation of MDAQMD air permit applications for the fire water pump and an emergency generator.

FPL Energy, Audit, California. Conducted a comprehensive audit of current air permit requirements in support of certification of the initial Title V application for the Blythe Energy Project. The audit included a review the risk management plan as well as CEMS data, source tests, and other requirements of the MDAQMD and EPA PSD permits.

Woodside, Land Use Permit Application for Liquified Natural Gas Terminal, California. Prepared the hazardous materials section of the Land Use Permit application for the proposed

Woodside Liquified Natural Gas (LNG) Deepwater Port terminal. The Land Use permit is the application that initiates the CEQA review; ENSR's approach was to supply a CEQA-equivalent application to the State Lands Commission. Work included evaluation of hazardous material impacts from construction and operation of both on-shore and offshore facilities. Also supported the Project by contributing to the Best Available Control Technology (BACT) analysis for the shipboard equipment, and quality control review of the air permit applications.

The Wood Group, Kings River Conservation District Peaker Plant, Fresno, California. Assisted in the preparation of the initial California Accidental Release Prevention Program Risk Management Plan for a Selective Catalytic Reduction system at a new peaker power plant near Fresno.

Honolulu Resource Recovery Venture, Oahu, Hawaii. Conducted a comprehensive audit of air programs and permits at Covanta's waste-to-energy facility in Hawaii.

California Portland Cement, Riverside, California. Assisted in evaluation of New Source Review and PSD requirements for the restart of a coal-fired fluidized bed boiler used for electrical generation at the facility in the SCAQMD. Investigation included BACT analysis, emission calculations and compliance determinations.

NAVIGANT
CONSULTING

David T. Larsen

David T. Larsen
Director

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Professional History

- Navigant Consulting, Inc. (1986 - Present) Director
- Arizona Electric Power Cooperative, Inc. (1975 - 1986) Supervisor of System Planning

Education

- B.S., Electrical Engineering, South Dakota State University, Brookings, 1970

Professional Associations

- Institute of Electrical and Electronics Engineers
- National Honorary Electrical Engineering Society

Mr. Larsen is a Director with Navigant Consulting, Inc. (NCI) and has over 35 years of experience in transmission and resource planning and the development and negotiation of power contracts. At NCI, he oversees the evaluation and planning of transmission projects and generation interconnection projects and provides technical support in the evaluation and negotiation of power contracts and the performance of power marketing analyses. Mr. Larsen has performed or supervised interconnection and system impact assessments for numerous renewable energy projects in the western United States and for proposed thermal generating projects in 25 states. He has also participated in the planning of several major electric transmission projects. He has represented one of NCI's major transmission owner clients on the Western Electricity Coordinating Council's Planning Coordination Committee.

Prior to joining NCI, Mr. Larsen was employed by the Arizona Electric Power Cooperative and was actively involved in resource and transmission planning in the Desert Southwest. Mr. Larsen was one of the original members of the Southwest Area Transmission Planning Committee, which was responsible for the performance of coordinated powerflow and transient stability evaluations of the interconnected system (500-kV, 345-kV, and 230-kV) in the Desert Southwest and served as chairman of the Committee.

Related, Recent Professional Experience

» **Palmdale and Victorville 2 Solar-Gas Hybrid Power Projects (Southern California).** These proposed Projects would have a net electrical output of approximately 570 MW and would utilize solar technology to generate approximately 50 MW of each Project's output. The Palmdale Project would be interconnected with the SCE system at the Vincent Substation while the Victorville 2 Project would be interconnected with the SCE system at the Victor Substation. For both of these Projects, NCI: (1) performed "fatal flaw" studies which were used by the proponents as a basis for the development of the pertinent interconnection applications; (2) assisted in developing the CAISO interconnection applications; (3) provided technical support during the resultant System Impact Study and Facility Study; and (4) provided transmission-related support during the development and filing of the AFCs with the California Energy Commission.

» **Mohave Solar Project (Southern California).** The Mohave Solar Project is a 250 MW project which will be located near Barstow, California. Since 2008 NCI has provided transmission interconnection related services to the project developer relative to the Mohave Project. These services have included: (1) Assisting in the development of the Project interconnection application with the California ISO (CAISO) and Southern California Edison (SCE) and participating in the pertinent scoping meeting : (2) reviewing and providing comments on the Interconnection Feasibility Study, the System Impact Study, the Facilities Study, and the Optional Study reports prepared by SCE and the CAISO; (3) participating in meetings with SCE and the CAISO at which the results of the above studies were discussed; and (4) providing expert witness testimony related to transmission matters as part of the Application for Certification for the Project which has been filed with the California Energy Commission..

» **Colusa Combined Cycle Project (Northern California).** The Colusa Project is a 700 MW combined cycle facility which is located near Colusa, California. NCI was retained by the original project proponent to undertake a "third party" system impact study for the Project. This study was coordinated with PG&E and the CAISO as well as with two affected parties (the Western Area Power Administration and the Sacramento Municipal Utility District). These studies identified the transmission system impacts caused solely by the addition of the proposed project and identified the system reinforcements and/or remedial actions necessary to mitigate the adverse impacts of the proposed project under various system conditions. Subsequent to the completion of the SIS, NCI provided technical support during the Facility Study process undertaken by PG&E and CAISO.

» **Avenal Combined Cycle Project (Northern California).** The Avenal Project is a 600 MW combined cycle facility which will be located near Avenal, California. NCI was retained by the project proponent to undertake a "third party" system impact study for the Project which could be used in developing the Application for Certification (AFC) for the Project. This study was

coordinated with PG&E and the CAISO and identified the transmission system impacts caused solely by the addition of the proposed project and identified the system reinforcements and/or remedial actions necessary to mitigate the adverse impacts of the proposed Project under various system conditions. Subsequent to the completion of the SIS, NCI also provided expert witness testimony related to the SIS as part of the AFC filing with the CEC for the Project.

» **California Transmission Planning Group. California.** On behalf of a major NCI client has been involved in various aspects of the on-going California Transmission Planning Group (CTPG) activities via which a conceptual transmission plan is being developed which would allow for California utilities to meet their RPS requirements in the year 2020. Activities have included: (1) participating in the activities of the technical work group and the scenarios development group; (2) reviewing and providing comments on various documents prepared by the CTPG; (3) performing powerflow studies to assess the impacts/benefits if facilities being proposed by two independent transmission developers were reflected in the studies and developing the documentation for these studies included in the CTPG Phase 3 report; and (4) performing powerflow studies to assess the impacts if very high levels of renewable energy was being imported into Southern California from Southern Nevada/Western Arizona. Is presently serving as chairman of the CTPG Study Group.

» **TANC Transmission Project (Northern California).** Worked with the member utilities of the Transmission Agency of Northern California (TANC) in the development of a proposed Transmission Project which would: (1) enhance the reliability of the transmission system in Northern California; (2) increase the ability to transfer power between utilities; (3) increase the operational reliability of the SMUD and TID Balancing Authorities; and (4) provide increased access to potential renewable resources. Activities included: (1) conducting and managing the technical studies performed to assess the benefits/impacts of the various components of the Project; (2) coordinating these activities with the pertinent TANC Members; and (3) completing the WECC sub-regional planning process for the Project.

» **Solana Generating Station Solar Project (Arizona).** The Solana Project is a 270 MW solar project that will be located near Gila Bend, Arizona. Since early 2008 NCI has provided transmission interconnection related services to the project proponent relative to the Solana Project. These services have included: (1) performing a preliminary system impact study which was filed as part of the CEC application with the ACC; (2) assisting in the development of the Project interconnection application with APS and participating in the scoping meeting with APS; (3) reviewing and providing comments on the Interconnection Feasibility Study, the System Impact Study, and the Facilities Study reports prepared by APS; and (4) participating in meetings with APS at which the results of the above studies were discussed.

» **Magnolia Power Project, Southern California.** Managed and was actively involved in the powerflow, transient stability, post-transient, and short circuit studies performed by NCI on behalf of the Project participants to assess impacts on the City of Burbank 69-kV system, to which the project will be connected, and on the 500-kV and 230-kV grid in the Los Angeles

Basin. Also coordinated Project-related technical studies with the Los Angeles Department of Water and Power (LADWP) and with Southern California Edison (SCE). Developed documents for use in the Application for Certification (AFC) submitted to the California Energy Commission and provided technical support to the Project manager in various discussions with LADWP and SCE regarding the replacement of circuit breakers on the LADWP and SCE systems.

» **Malburg Power Project, Southern California.** Managed and was actively involved in the powerflow and short circuit studies performed by NCI on behalf of the City of Vernon to assess impacts on the City's 66-kV system, to which the project will be connected, and on the 500-kV and 230-kV grid in the Los Angeles Basin. Also coordinated Project-related technical studies with the Los Angeles Department of Water and Power (LADWP) and with Southern California Edison (SCE). Developed documents for use in the AFC submitted to the California Energy Commission and provided technical support to the Project manager in various discussions with LADWP and SCE regarding the replacement of circuit breakers on the LADWP and SCE systems.

PHILIP LEITNER

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Orinda, CA 94563
(925) 253-8400
E-mail: pleitner@pacbell.net

Education

B.S.	Zoology	1958	Saint Mary's College of California
M.A.	Zoology	1960	University of California, Los Angeles
Ph.D.	Zoology	1961	University of California, Los Angeles

Professional Experience: Teaching and Academic Administration

1962-present Professor of Biology, Saint Mary's College of California.
1969-1985 Chairperson, Biology Department, Saint Mary's College of California.
1985-1992 Dean, School of Science, Saint Mary's College of California.
2002-present Adjunct Professor, California State University, Stanislaus

Professional Experience: Environmental Consulting

2009-present Principal Investigator, cooperative study on presence and distribution of Mohave ground squirrels (*Spermophilus mohavensis*) on federal lands with funding from ERDC-CERL, US Army Corps of Engineers.

2008-present Consultant to AECOM in providing permitting assistance before the California Energy Commission on Mohave ground squirrel issues for the Palmdale Hybrid Power Project.

2007-08 Subcontractor to Tetra Tech, Inc. Prepared report on current status of the Mohave ground squirrel for Edwards Air Force Base. Assembled and analyzed database of all available records for the period 1998-2007.

2006-07 Project Director for Endangered Species Recovery Program, California State University, Stanislaus. Directed intensive surveys for the Mohave ground squirrel on the Western Expansion Area of Fort Irwin.

2002-2004 Subcontractor to Anteon Corporation. Responsible for field surveys of the El Mirage Off-Highway Vehicle Open Area to determine the status of Mohave ground squirrel. Studies conducted on behalf of US Department of Interior Bureau of Land Management.

2001-present Project Director, Mohave Ground Squirrel Research and Monitoring Program. Managing multi-year research effort for Endangered Species Recovery Program, California State University, Stanislaus. Studies designed to support comprehensive conservation strategy for this state-listed species.

2001 & 2006 Contractor to Coso Operating Company, LLC. Responsible for monitoring study of Mohave ground squirrel populations in satisfaction of California Energy Commission mitigation requirements.

1998-2001 Contractor to Desert Tortoise Preserve Committee with funding from California Energy Commission. Conducted field research to determine distribution, abundance, and habitat requirements of state-listed Mohave ground squirrel in Inyo, Kern, and San Bernardino counties.

Permits

Memorandum of Understanding with California Department of Fish and Game regarding studies of the Mohave Ground Squirrel (*Spermophilus mohavensis*). Effective Mar. 31, 2000; formally amended on Mar. 11, 2005 and extended to Oct. 31, 2012.

Recent Papers and Reports

Bell, K.C., D.J. Hafner, P. Leitner, and M.J. Matocq. 2009. Phylogeography of the ground squirrel genus *Xerospermophilus* and assembly of the Mojave Desert biota. Journal of Biogeography, 37:363-378.

Leitner, P. 2008. Current status of the Mohave ground squirrel. Transactions of the Western Section of The Wildlife Society 44:11-29.

Leitner, P. 2008. Mohave ground squirrel surveys at Red Rock Canyon State Park, California. Prepared for California Department of Parks and Recreation, Tehachapi District, Lancaster, CA. Endangered Species Recovery Program, California State University, Stanislaus, Fresno, CA. 26 pp. + appendices.

Leitner, P. 2007. Mohave ground squirrel survey, El Mirage Off-Highway Vehicle Open Area, 2002 and 2004. Prepared for USDI Bureau of Land Management, California Desert District, Moreno Valley, CA. 17 pp.

Leitner, P. 2007. Mohave ground squirrel surveys at the Western Expansion Area of the National Training Center and Fort Irwin, California. Prepared for ITS Corporation, San Bernardino, CA. Endangered Species Recovery Program, California State University, Stanislaus, Fresno, CA. 26 pp. + appendices.

Harris, J.H. and P. Leitner. 2005. Long distance movements of juvenile Mohave ground squirrels, *Spermophilus mohavensis*. Southwestern Naturalist, 50:188-196.

Harris, J.H. and P. Leitner. 2004. Home-range size and use of space by adult Mohave ground squirrels, *Spermophilus mohavensis*. Journal of Mammalogy, 85:517-523.

Leitner, P. and B.M. Leitner. 1998. Coso Grazing Exclosure Monitoring Study. Mohave ground squirrel study, Coso Known Geothermal Resource Area, major findings, 1988-1996. Final Report. Prepared for CalEnergy Company, Inc., Ridgecrest, CA. 42 pp. plus appendix.

RÉSUMÉ

Laurie K. Lile

Experience:

2006 to Present — **Assistant City Manager** — **Palmdale, CA**

This position encompasses a wide range of responsibilities including:

- Providing direct supervision of Department Heads for the Public Works, Economic Development, Planning, Public Safety, and Finance Departments.
- Oversight of all development services functions; interaction with a broad range of City staff, staff from other agencies and members of the public.
- Providing professional input to, and accept direction from, the City Manager and members of the City Council with the intent of implementing the goals of the community.

1998 to 2006 — **Planning Director** — **Palmdale, CA**

This position encompasses a wide range of responsibilities including:

- Providing direct supervision for the Planning Staff, functioning in the disciplines of planning, code enforcement, business license and clerical support.
- Evaluation of all development applications; preparation of staff reports and presentations to the Planning Commission and City Council; interaction with a broad range of City staff, staff from other agencies and members of the public; enforcement of municipal and zoning codes; and issuance of business licenses.

1993 to 1998 — **Principal Planner** — **Palmdale, CA**

Responsibilities included:

- Supervision of the residential development division—three planners and clerical support.
- Review and comment on all residential development projects: subdivision maps, multi-family development project, and long-range residential plans.
- Preparation of all demographic growth projections.
- Presentations before the Planning Commission and City Council, interaction with City Development Services Department staff as well as interagency coordination.

1988 to 1993 — **Assistant/Associate Planner** — **Palmdale, CA**

Responsibilities included:

- Review and preparation of environmental documents for Ritter Ranch Specific Plan, City Ranch Specific Plan, General Plan EIR and many subdivision maps, Conditional Use Permits, and Site Plan Review applications.
- Presentations before the Planning Commission and City Council, and preparation of letters and staff reports.
- Assisting the public with zoning information and other general inquiries.

Education:

- Masters of Business Administration, Pepperdine University, 2010
- Bachelors of Science, Range and Wildlands Science, University of California, Davis, 1984
- Graduate level course work, Urban and Regional Planning, California State Polytechnic University, Pomona, 1986-1988
- Certificate of Completion Senior Executives in State and Local Government, Harvard University, Kennedy School of Government, 2007

38300 SIERRA HIGHWAY, PALMDALE, CALIFORNIA 93550

Carl E. Lindner
Environmental Site Assessment Lead

Education

MS, Environmental & Occupational Health, New York Medical College

BA, Environmental Science, State University of New York (S.U.N.Y.), College at Purchase

Years of Experience

With AECOM 3

With other firms 15

Professional Affiliations

Association of Environmental Professionals (AEP)

Training and Certifications

National Red Cross CPR/First Aid certified

40 Hour Hazardous Waste

Operations & Emergency Response (HAZWOPER)

Publications and presentations

Asbestos as a complete carcinogen, New York Medical College, Valhalla NY, 1998 Dissertation - Graduate School of Health Sciences

Mr. Lindner has provided consistent management over numerous large contracts while continuously improving his group's quality and client satisfaction. He has worked with customers to offer flexible staffing options to enable them to meet deadlines and fulfill emergent requirements. While conducting fatal flaws analyses, Environmental Site Assessments (ESAs), compliance surveys and facility audits, he understands the importance of communicating findings as quickly as possible, making the client aware of significant impacts or deficiencies and recommending alternatives or corrective action where applicable. He has consistently demonstrated his commitment to successful implementation of AECOM's health and safety guidelines. He is currently focused on supporting the permitting requirements for large renewable energy projects in the US Southwest. These generation facilities are solar thermal, solar photovoltaic and hybrid solar/natural gas installations and their associated linear facilities.

Experience

Solar Millennium, LLC, Blythe Solar Power Project - Application For Certification (AFC). Project manager for the preparation of an AFC for the successful permitting of four individual 250 megawatt solar thermal power facilities co-located on one Bureau of Land Management (BLM) right-of-way in eastern Riverside County, CA. The analyses conducted for the projects included the analyses of the potential impacts of the associated linear facilities. The AFC addressed federal and state environmental requirements and evaluated the potential project impacts to major resources as it underwent simultaneous National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) review. Tasking included collecting, reviewing and compiling data from the project proponent, the subcontractors, and in house staff in order to facilitate the numerous detailed surveys, analyses and modeling required in the AFC. Outstanding data items were tracked and prioritized in order to ensure completion of required sections and surveys. The work also included managing, tracking, and reporting progress on technical resource studies, GIS mapping support, engineering studies, providing technical and managerial oversight for the preparation of over 3,000 pages of technical documentation, and interacting with various federal, state and local regulatory agency personnel.

Subsequent responsibilities included responding to several rounds of data requests from California Energy Commission (CEC) staff in order to expedite the determination of "Data Adequate" for the proposed facility and shepherding the project through to final CEC license. Since this was one of the first projects to go through the "joint" NEPA/CEQA process it also involved providing requested data to BLM staff on an ongoing basis in order to facilitate the completion of the FEIS and the ROD for the project.

Solar Reserve - Critical Issues Analyses. Preliminary reviews of potential site constraints were prepared to evaluate the potential for siting solar power facilities on the identified properties located in Yuma, Maricopa and La Paz counties in AZ. These reviews and evaluations involved consideration of those issues generally addressed in a NEPA analysis and used to evaluate the potential impacts for discretionary permitting. Each issue was preliminarily evaluated not to determine its potential environmental impact, but to see if a particular issue had the potential to affect the feasibility of siting generation facilities on the identified properties ("fatal flaws"). Environmental and engineering documentation provided by the client was also reviewed

Edison Mission Energy - Critical Issues Analyses. Integral to the development of a customized CEQA-based checklist to apply to potential sites proposed to be developed with commercial photovoltaic facilities. Supervised the preparation of the Biological Resources, Cultural Resources, Soils & Agriculture, Geology & Geological Hazards, Water Resources, Socioeconomics & Environmental Justice, Noise, Visual and Air Quality sections. Compiled the data provided and prepared the Hazardous Materials/Wastes section of Critical Issues Analyses for numerous parcels being considered for commercial photovoltaic development in LA, San Bernardino and Kern counties.

Inland Energy, Palmdale Hybrid Power Project – Application for Certification. Deputy Project Manager and ESA Lead for the preparation of an AFC for the permitting and construction of the Palmdale hybrid gas-solar thermal power plant. The tasking involved collecting and compiling data from the project proponent, the subcontractors, and in house staff in order to facilitate the surveys, analyses and modeling required in an AFC. Additional support involved tracking outstanding data items and organizing data for the individual section authors and writing the Hazardous Materials section for the document. Separate Phase I ESAs were conducted for the approximately 380-acre plant site and the 35 mile transmission line route in order to identify any known hazardous materials/ waste issues prior to construction of the proposed facilities. Responded to data adequacy requests from CEC staff in order to expedite the determination of "Data Adequate" for the proposed facility. After AFC submittal, supported response to data requests, especially with respect to the need for ESAs for the transmission line route.

Sempra Global - Regulatory Permitting Analysis, Photovoltaic Project, Clark County, Nevada. Conducted research and developed guidance to identify the permits required in order to site and develop a commercial photovoltaic facility in the Clark County, NV area. Focused support involved communication with the United States Army Corps of Engineers with respect to jurisdictional status of the Eldorado Dry Lake as

well as Storm Water Pollution Prevention Plans and Spill Prevention Control and Countermeasures requirements. The guidance document also identified the likely agencies to be involved in the development process, the permits required, the permitting fees, and the general schedule for processing the individual permit applications.

Macquarie Cook Power - Environmental Constraints Review, Solar Thermal Project, Nye County, Nevada. Supervised and conducted the review and evaluation of existing environmental and site development documentation for a potential solar thermal facility to be located in Nye County, Nevada. The documentation provided focused on Biological, Paleontological & Archaeological and Water Resources. The report identified the findings of a critical evaluation of the existing documentation prepared for the proposed facility. The technical review was conducted in order to determine whether the existing documentation effectively balances the physical requirement against the impact that this proposed project will have on the landscape, the community, and the surrounding environment.

Naval Base Ventura County (NBVC), Environmental Compliance Support, Ventura County, California. Directly responsible for the daily management of several distinct teams supporting the Public Works Department at Naval Base Ventura County including Environmental, Engineering, and GIS. Responsible for the administration of all aspects of ongoing, multi-million dollar, technical support efforts.

Various Banks & Lending Institutions, Phase I Site Assessments/ Phase II Project Management, National. Primary job responsibilities were to conduct Phase I and Phase II Site Assessments on commercial, industrial, agricultural and residential properties according to ASTM standards. Over 200 Phase I Site Assessments were conducted nationally. Phase II project management responsibilities included obtaining estimates, reviewing bids, coordinating contractors, and ensuring that necessary remediation was completed according to all applicable governmental regulations. Responsibilities also included: daily communication with Federal, State and local regulatory agencies; performed audits on industrial and commercial properties to insure regulatory compliance, where particular emphasis was placed in the areas of hazardous materials and/or wastes, petroleum and chemical contamination; and reviewed and interpreted historical, geological, hydrological and topographical maps.

Merlyn J. Paulson
FASLA, Visual Resources Lead

Education

MLA, Landscape Architecture II (with awards), Harvard University

BLA, Landscape Architecture and Environmental Planning, Utah State University

Years of Experience

With AECOM: 11
With other firms: 27

Professional Affiliations

International Union of Landscape Ecologists

Fellow, American Society of Landscape Architects

Mr. Paulson is a landscape architect and environmental planner with 38 years of experience in aesthetics of natural and cultural resources, geographic information systems (GIS) and land architecture. Clients with needs related to site, linear and regional projects have benefited from his knowledge in landscape architecture and capabilities in acquiring and building GIS databases, conducting spatial analyses and simulations, and generating detailed mapping, imagery and graphics. Since 1975, he has been a teaching and research professor at Colorado State University, where he founded the program in landscape architecture and environmental planning. Particular research and application emphasis has been on aesthetics and analysis and planning for extensive human use of highly scenic and ecologically sensitive landscapes. For instance, he had primary responsibility for development of the Bureau of Land Management's Marine Methodology for Visual Resource Management for energy development in the Outer Continental Shelf and Coastal Zone.

Mr. Paulson has focused on development and applications of methods for computer-aided spatial analysis and illustration. In the late 1970s, he initiated the first integrated mapping and perspective program (LIS) for geographic information systems. His commitment to technical innovation and quality has resulted in the reliable applications of geographic information systems for landscape analysis and visual resources problems. In addition, exemplary capabilities in applications of digital imaging and image processing provide for extremely realistic, photographic visualization of proposed landscape changes before they are actually implemented.

Mr. Paulson has conducted eight research projects that have resulted in expansion of computer-aided spatial analysis and map and perspective illustration technology. His programs and methods for visual information systems mapping, perspective graphics, simulations, and visual modeling have been obtained by several federal and state agencies, private firms, universities and foreign countries.

Experience

Beacon Solar Energy Project, Next Era Energy Resources, Inc., California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the generating station, solar array and transmission line options.

Blackrock Geothermal Energy Project, CAL Energy, Salton Sea, California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the generating station, cooling towers and transmission line options.

Blythe Solar Energy Project, Solar Millennium, Blythe, California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the generating stations, solar arrays and transmission line.

Colstrip Power Plant and Ancillary Facilities, Colstrip, Montana. Graduate degree thesis at Harvard University. This project served as basis for research and development of methods for computer - aided photographic visual simulations and GIS visibility analyses of the generating station and transmission lines.

Genesis Solar Energy Project, NextEra Energy Resources, Inc., California. AECOM technical expert for CEC expert testimony for visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the generating station, solar array and transmission line.

Missouri River Energy Services / Ottertail Power Company, Big Stone II Generating Station Expansion and 230kV Corridor Selection Project, South Dakota, Minnesota. Technical expert at ENSR for GIS for all disciplines, field investigation, visual/aesthetics inventory, computer - aided photographic visual simulations, and visibility analyses for the Big Stone II Generating Station and 230kV transmission line corridors to several substations near Morris, Spicer, and Granite Falls, Minnesota.

Oceanway Secure Energy Project, Los Angeles Basin, California. Technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the LNG ships and pipelines.

Palen Solar Energy Project, Solar Millennium, Desert Center, California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of

alternatives connected with the generating stations, solar arrays and transmission line.

Palmdale Hybrid Power Project, Inland Energy, Palmdale, California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, GIS visibility analyses of alternatives connected with the generating station, solar array, and transmission line and landscape plan for transplanting of Joshua trees.

Rawhide Generating Station, Platte River Power Authority, Colorado. EDAW technical staff for visual resources field investigation, visual/aesthetics inventory and analysis, connected with the generating station and transmission lines.

Reliant Energy Services, Bighorn to Eldorado 230-kV Corridor Selection Project, Nevada. ENSR technical expert for GIS for all disciplines, computer - aided photographic visual simulations, and visibility analyses for 230-kV transmission line corridors.

Ridgecrest Solar Energy Project, Solar Millennium, Ridgecrest, California. AECOM technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses of alternatives connected with the generating station, solar arrays and transmission line.

Santan Generating Station, Arizona Public Service Co., Phoenix, Arizona. ENSR technical expert for GIS and visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, and GIS visibility analyses for the generating station, transmission lines and pipeline.

Sierra Pacific Power Company, 1000 Springs 2000-MW Generating Station Simulation Project, 1000 Springs, Nevada. Performed environmental simulations of the proposed generating station in north central Nevada.

Tri-State Generation and Transmission Association, Pyramid Generating Station, New Mexico. ENSR technical expert for GIS and visual resources for aerial photographic interpretation, digitizing, detailed mapping, and spatial analyses of alternatives connected with the generating station, transmission line and pipeline.

Victorville 2 Generating Station and Solar Facility, Inland Energy Corp., Victorville, California. ENSR technical expert for visual resources field investigation, visual/aesthetics inventory and analysis, computer - aided photographic visual simulations, GIS visibility analyses of alternatives connected with the generating station, solar array, and transmission line and landscape plan for transplanting of Joshua trees.

TransWest Express and Western Area Power Administration, 600-kV DC Transmission Line Project, Colorado, Nevada, Utah, and Wyoming. AECOM technical expert for visual resources.

Western Area Power Administration, Lawrence Livermore Laboratory Direct Service 230-KV Transmission Line Project, Livermore, California. Woodward - Clyde Consultants technical expert for visual resource simulations for critical vantage points between Bethany Reservoir and Patterson Pass Road near Livermore.

Nicholas Ricono

Senior Biologist and Regulatory Specialist

Professional summary

Mr. Ricono has over 11 years of experience as a Biologist and Regulatory Specialist in the environmental consulting field. He provides consulting services at all levels from due diligence and resource assessment, through planning and permit acquisition, to environmental compliance oversight. Mr. Ricono specializes in the management of multifaceted, multiphase projects including linear and non-linear development projects and maintenance of existing utilities. He works directly with local, state and federal agencies in their approval process for projects including the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), Bureau of Land Management (BLM), State Water Resources Control Board, Regional Water Quality Control Boards (RWQCBs), the California Department of Fish and Game (CDFG) and the California Coastal Commission (CCC). He has in depth knowledge of local, state and federal regulations including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Clean Water Act (CWA), State and Federal Endangered Species Acts (ESAs), California State Fish and Game Code (CSFGC), California Coastal Act, among others. He has managed or otherwise contributed to projects directed by the California Public Utilities Commission (CPUC), California Energy Commission (CEC), Federal Energy Regulatory Commission (FERC), and the Federal Emergency Management Agency (FEMA).

Professional Registrations

Certifications

Basic Wetland Delineation, Wetland Training Institute, February 2001

OSHA 40-Hour Hazardous Waste Operations (HAZWOPER) Training (29 CFR 1910.120), Initial Certification 1999, Annual 8-Hour Refresher Training through 2009.

Additional training

Arid West Supplement, Wetland Training Institute, August 2007.

Federal Wetlands Regulatory Policy, Wetland Training Institute, March 2002 and November 2008.

Wetlands and Wildlife: Making the Connection, Joint Conference of the Western Chapter of the Society of Wetland Scientists and the Western Section of The Wildlife Society, April 2005

Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, The Desert Tortoise Council, November 2004

California Tiger Salamander: Ecology and Survey Techniques Workshop, The Wildlife Society-Western Section, October 2003

Identification and Ecology of Sensitive Amphibians and Reptiles of Southern California, The Wildlife Society - Western Section, May 2003

Successful CEQA Compliance, UCLA Extension, November 2002

Environmental Impact Analysis, Southwest Texas State University, Spring 2001.

Education
MS, Biology, Texas A&M University-Corpus Christi, 1999

BS, Biology, Creighton University, 1994

Memberships/Affiliations
Association of Environmental Professionals, San Diego Chapter

Society of Wetland Scientists

Society for Ecological Restoration

The National Audubon Society

Ducks Unlimited

Representative Projects
Palmdale Hybrid Power Project, AECOM, Palmdale, California. (2008-Present) Delineated jurisdictional waters for development of an approximately 377 acre solar thermal electrical generation facility and 36 mile transmission line near the City of Palmdale. Produced a delineation report in support of environmental documentation for project approval from the CEC. Delineation was used by engineers during design phase to avoid impacts to jurisdictional waters. Coordinated receipt of "no permit required" letters from USACE and CDFG including field confirmation visits.

Victorville 2 Hybrid Power Project, ENSR International, Victorville, California. (2006-2007) Delineated jurisdictional waters for development of an approximately 340 acre combined solar-thermal and natural gas fired power plant and 18.5 miles of transmission line near the City of Victorville. Produced a delineation report in support of environmental documentation for project approval from the CEC. Delineation used by engineers during design phase to avoid impacts to jurisdictional waters.

Valley-Ivyglenn Transmission Project, Southern California Edison. (2008 – Present). Delineated jurisdictional waters and prepared biological resources technical reports for proposed 40-mile expansion transmission lines from Valley substation to Ivyglenn, through Western Riverside County. Assessed impacts to jurisdictional waters related to project operations and completed permit applications to USACE, RWQCB, and CDFG for those related impacts. Included coordination of biological resource assessments, impact assessments, and mitigation strategies through the Western Riverside County Multi Species Habitat Conservation Plan (MSHCP) in all documentation.

Road Expansion Projects, California Department of Transportation (Caltrans) District 8, San Bernardino County, California. (2010-Present). Provided regulatory support and delineates jurisdictional waters for multiple road and bridge expansion projects in San Bernardino County, California. Produced jurisdictional delineation reports using the Arid West Regional Supplement to the Corps of Engineers Wetland Delineation Manual (2008) and the Field Guide to the Identification of Ordinary High Water Mark in the Aird West Region (2008). Produces permit applications for Section 404 and 401 of the CWA and 1602 of the CSFGC.

Port of Guam Expansion Project, Parsons Brinkerhoff, Guam. (2010-Present). Delineated jurisdictional waters and provided regulatory support to Parsons Brinkerhoff for permitting the expansion of the Jose D. Leon Guerrero Commercial Port. Jurisdictional waters in the project area included those under tidal influence including mangrove dominated wetlands. Included consultation and field confirmation visits with USACE, Guam EPA, and Guam Department of Agriculture staff. Delineation was used by engineers to design stormwater outfalls to avoid wetland impacts.

Pipeline Maintenance Operations, Kinder Morgan Energy Partners (KMEP), San Diego, San Bernardino, Orange, and Riverside Counties, California. (2002-Present). Provided regulatory guidance for multiple maintenance and relocation projects along KMEP pipelines throughout southern California and southern Nevada. Projects include assessment of impacts to sensitive biological resources along pipeline routes and the related implications to federal, state, and local permitting requirements. Successful completion of pipeline maintenance

operations include the timely acquisition of those permits and institution of compliance measures required by permit conditions to limit impacts to sensitive resources during construction. Projects have required standard assessment and permitting procedures for the USACE, CDFG and RWQCB, but have also included emergency permitting requirements, consultation under Section 7 and Section 10 of the ESA, establishment of mitigation and monitoring programs, and restoration of affected areas.

Pipeline and Terminal Construction Project at Travis Air Force Base, KMEP, Solano County, California. (2008-Present). Project Manager for regulatory approval for jet fuel pipeline and tank farm construction at Travis AFB. Conducted initial habitat assessments, delineated wetlands, and coordinated sensitive species surveys in the project area. Produced documentation in support of NEPA, Section 7 Consultation, and permit applications including Section 404 and 401 of the CWA. Project had potential impacts to listed species and sensitive habitats including vernal pools and required extensive coordination with USFWS for mitigation of unavoidable impacts. Future project needs include environmental compliance monitoring during construction and post-construction restoration, assessment and reporting for agency approval.

Road Expansion Projects, San Diego County, California. (2009). Delineated jurisdictional waters for road expansion projects for San Diego County Department of Public Works near the city of Ramona. San Vicente Road project involved inspection of an approximately 300 acre project area and delineation of all waters within that area including perennial and ephemeral washes and associated wetlands. Dye Road project involved inspection of an approximately 140 acre project area and delineation of ephemeral washes and disturbed wetlands including vernal pools.

Pipeline Maintenance at Sandy's Ranch, KMEP, San Diego California. (2009-Present). Assessed and produced documentation on biological and cultural resources for a proposed repair of a washed out section of an active KMEP pipeline located in Gonzalez Canyon, just east of the City of Del Mar in San Diego County. Delineated jurisdictional waters and coordinated sensitive species surveys and cultural surveys and produced documentation in support of permit applications. Project occurred in a Multi-Habitat Planning Area (MHPA) within the City of San Diego Multi Species Conservation Plan (MSCP) and included coordination of impact assessment and mitigation strategies with the City Planning Department, and resource agencies.

Bridge Removal Project at Camp San Luis Obispo, Army National Guard, San Luis Obispo County, California. (2009-2010). Produced Biological Assessment and provided regulatory support for a project involving the removal of a bridge over Chorro Creek on Camp SLO. Produced documentation in support of Section 7 Consultation including Biological Assessments for USFWS and NMFS covered species. Produced permit applications for Section 404 and 401 of the CWA and 1602 of the CSFGC.

Pipeline Maintenance Project, KMEP, San Bernardino County, California. (2008). Provided regulatory guidance for a proposed pipeline maintenance project in Lytle Creek in San Bernardino County California. Assessed impacts to sensitive biological resources and consulted with USFWS under Section 10 of the ESA for unavoidable impacts to the San Bernardino kangaroo rat (SBKR). Implemented a Low Effect Habitat Conservation Plan (HCP) with USFWS for this project, and future pipeline maintenance operations in SBKR habitat.

Wetland Inventory, Torres Martinez Desert Cahuilla Indians, Riverside County, California. (2008). Inventoried jurisdictional waters including wetlands on reservation lands near the Salton Sea in California as part of a wetland restoration grant received by the Torres Martinez Indian tribe. Project included identification, classification, and quantification of wetlands and other waters using the USACE and Cowardin system that could be used for future planning of wetland restoration sites and permitting of future projects. Project included interpretation of aerial photography, field data collection, and processing of data using Geographic Information Systems (GIS). The project identified over 10,000 acres of jurisdictional waters including over 800 acres of wetlands.

Railway Expansion Project, Union Pacific Railroad, Riverside County, California. (2007-2008). Provided environmental compliance support for expansion of Union Pacific Railroad (UPRR) tracks near the city of Palm Springs, Indio, and Thermal, California. Included the production and implementation of an environmental compliance program based on existing approvals and permits to insure timely and effective completion of the project. Included coordination of pre-construction surveys for sensitive species, training of contractors on compliance measures, construction monitoring, restoration activities, and reporting. Included coordination of communication between field crews, site managers, project managers, and agency personnel at all levels and stages of the project.

Sewer Line Maintenance Project, WILLDAN, San Diego County, California. (2007) Provided regulatory guidance for a project involving the emergency repair and cleanup of a sewer spill that occurred on a Rainbow Water District sewer line that travels parallel to Horse Ranch Creek near the City of Rainbow, California. Emergency access and clean up required removal of riparian vegetation in an area occupied by the federally endangered least Bell's vireo and other sensitive species. Provided guidance on emergency permitting procedures and conducted follow up Biological Resources Assessment to assess potential impacts to sensitive species. Included an assessment of additional impacts related to maintenance road construction adjacent to the sewer line and the permitting issues related to those impacts. Coordinated impact assessment and mitigation strategies with the San Diego North County MSCP as there was a potential for it to be approved prior to project completion.

Created Marsh Construction, Coachella Valley Water District, Dos Palmas Preserve, Riverside County, California. (2007) Provided regulatory guidance for the construction of a Created Marsh proposed to provide mitigation for project impacts to wetlands resulting from the Coachella Canal Lining Project. Conducted jurisdictional determination and delineated waters of the State and the U.S. using guidelines approved by the U.S. Army Corps of Engineers (USACE) and the California Department of Fish and Game (CDFG). Required implementation of Arid West Interim Regional Supplement to the USACE Wetland Delineation Manual. Applied for permits under Section 404/401 of the CWA and Streambed Alteration Agreements (SAA) under Section 1602 of the CSFGC for construction of the Created Marsh.

Pipeline Relocation Project, KMEP, Coachella Valley, California. (2007) Provided environmental compliance support for an 11 mile pipeline relocation project along UPRR tracks near the city of Palm Springs. Required application of existing permit conditions as part of a UPRR track expansion project, including environmental compliance monitoring, pre-construction surveys for sensitive species, training, agency communication, and reporting.

OceanWay Secure Energy Liquefied Natural Gas Project, Los Angeles, California. (2007-2008) Produced Biological Section of a combined Environmental Impact Report/Environmental Impact Statement for the placement of a Liquefied Natural Gas terminal and pipeline at an offshore deep water port in the Santa Monica Basin. Included accumulation of available information on sensitive biological resources in the project area, the implementation of measures designed to avoid impacts to those resources, and assessment of the significance of unavoidable impacts.

Tehachapi Renewable Transmission Project, Southern California Edison. (2007) Produced biological resources technical report and the biological section of a Proponent's Environmental Assessment (PEA) for the CPUC. Project included the proposed expansion and upgrade of sections of approximately 170 miles of transmission lines through semi-arid desert, agricultural lands, the Angeles National Forest, and small-to-large incorporated areas, in more than 40 federal, state, and local jurisdictions from Kern County to the Los Angeles Basin.

Wastewater Control Structure Permitting, Meridian Gold Mine, Calaveras County, California. (2005-2008) Provided regulatory guidance on multiple design projects to control wastewater discharges from the Royal Mountain King Mine site in Calaveras County. Projects included weir construction, wetland treatment system construction and diffusion flume construction to remove, store, or otherwise control groundwater and surface water discharges during closure of the mine site. Delineated jurisdictional waters and assessed biological resources on the 2000-acre mine site, produced permit applications for Section 404/401 permits

and SAAs, and provided technical assistance on wetland treatment options for control of various constituents.

Irrigation Pond Construction, Sunol Valley Golf Course, Alameda County, California. (2005-2007) Provided regulatory guidance for the development and restructuring of irrigation ponds at the golf course in Alameda County, California. Project required the assessment of biological resources including jurisdictional determination and delineation using US ACE and CDFG methods. Produced the Biological Section of an Initial Study in support of Mitigated Negative Declaration for CEQA review. Produced Wetland Delineation Report, Biological Assessment, and Habitat Mitigation and Monitoring Plan for the project in support of permitting requirements. Filed for permits under Section 404/401 of the CWA, Section 1602 of the CSFGC. Project required consultation with the USFWS under Section 7 of the ESA.

Pipeline Maintenance Operations in Coastal Wetlands, KMEP, Contra Costa, Solano, Yolo Counties, California. (2005-2006) Provided regulatory guidance including assessment of biological resources and wetland delineation for 75 sites along a 60-mile petroleum pipeline scheduled for maintenance within the Carquinez Strait and through the Suisun Marsh in the Bay Area. Produced Wetland Delineation Report, Biological Assessment, and Habitat Mitigation and Monitoring Plan for the project in support of permitting requirements. Filed for permits under Section 404/401 of the CWA, Section 1602 of the CSFGC and San Francisco Bay Conservation and Development Commission (BCDC) for maintenance activities within the Suisun Marsh. Project required consultation with the USFWS and NOAA-Fisheries under Section 7 of the ESA.

Drainage Ditch Maintenance, Burlington Northern Santa Fe Railway (BNSF), Contra Costa County, California. (2005) Assessed biological resources and provided regulatory support for maintenance and mosquito control within an industrial drainage ditch leading to San Francisco Bay. Required permitting for USACE, CDFG, RWQCB and BCDC.

Fiber Optic Line Placement, Level (3) Communications (Level (3)), Santa Barbara County, California. (2002-2005) Provided regulatory guidance including production of wetland delineation reports and biological assessments in support of CEQA documents and permit applications. Project involved filing for amendment to Mitigated Negative Declaration for fiber optic line construction in wetland habitat within Santa Barbara County. Included a public meeting and County approval for the amendment. Included wetland delineation using USA CE and Cowardin methods used by the CDFG and the CCC. Obtained 404 permits under Nationwide Permit 12 and SAAs. Also included development of Horizontal Directional Drilling (HDD) Plans, Frac-Out Contingency Plans, Stormwater Pollution Prevention Plans (SWPPP), Spill Prevention Control and Countermeasure (SPCC) Plans, Revegetation Plans, and Mitigation and Monitoring Plans.

Fiber Optic Line Placement, Level (3), Vandenberg Air Force Base, California. (2003-2005) Provided regulatory guidance including production of a Biological Assessment in support of permits including the Air Force Environmental Impact Analysis Process (AF Form 813) to permit open trench and HDD operations within Vandenberg Air Force Base. The project was designed to place fiber optic line beneath two river systems including the Santa Ynez River and San Antonio Creek. Obtained 404 permit under Nationwide Permit 33 and Streambed Alteration Agreements. Involved Section 7 Consultation with USFWS. Also included development of HDD Plans, Frac-Out Contingency Plans, SWPPP, SPCC Plans, Revegetation Plans, and Mitigation and Monitoring Plans. Provided environmental compliance monitoring support for construction of temporary conduit spanning jurisdictional waters.

Pipeline and Terminal Construction Project at Marine Corps Station Miramar, KMEP, San Diego County, California. (2005-2006) Provided regulatory guidance including assessment of biological resources and production of Biological Section of NEPA document for the development of a tank farm and pipeline at Marine Corps Air Station Miramar in San Diego, California. Assessed potential for impacts to sensitive species and natural communities and provided recommendations for limiting the potential for significant impact as a result of construction.

Pipeline Relocation and Stream Restoration, KMEP, Contra Costa County, California. (2005) Provided regulatory guidance including production of biological resource assessment and permitting documentation for relocating two 1000-foot pipeline segments beneath Codornices Creek near the City of Albany. The project required permitting under Section 404 and 401 of the CWA, Section 1600 of the CSFGC, and Consultation with NOAA Fisheries under Section 7 of the ESA. Designed Revegetation Plan and provided oversight for implementing restoration of disturbed areas along the stream channel during construction.

Erosion Control Project for Pipeline Protection, KMEP, San Bernardino and Riverside Counties, California. (2005-2007) Provided regulatory guidance including biological resource assessments and production of permitting documentation at multiple locations along pipelines exposed during severe flood events in the winter of 2004/2005. Engineered designs included relocating sections of pipe away from seasonal drainages and construction of a variety of structures that would provide protection in existing locations. Filed for Section 404/401 permits and SAAs for multiple sites including the use of State and federal emergency permits for immediate repair of severely eroded locations. Provided environmental compliance monitoring support for construction operations.

Sewer Line Relocation, City of Oceanside, California. (2007) Coordinated environmental compliance monitoring for HDD project to place a pipeline under the San Luis Rey River in Oceanside, California. The HDD was approximately 2,500 feet in length and required the removal of riparian and coastal sage scrub vegetation in order to effectively track the drill head. Conducted pre-construction surveys for sensitive plant and bird species and monitored crew members for the avoidance and minimization of vegetation removal along the bore path.

Section 10 (a)(1)(b) Permitting, KMEP, San Joaquin County, California. (2003) Produced an environmental assessment and a Habitat Conservation Plan, pursuant to Section 10 (a)(1)(b) of the ESA, for potential impacts to vernal pool tadpole shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp. Potential impact related to anomaly inspection of petroleum pipeline in vernal pool habitat.

Stormwater Pollution Prevention, Sempra Energy, California. (2003-2005) Produced SWPPPs for linear and non-linear utility construction projects throughout California to comply with federal and state requirements under the CWA. Included filing of Notice of Intent, production of SWPPP, training of construction crews in use of Best Management Practices, and facility inspection before, during, and after storm events.

Natural Gas Pipeline Construction, Pacific Gas and Electric, San Joaquin County, California. (2003) Developed Water Quality Section of a document produced to meet Federal Energy Regulatory Commission and CEQA guidelines for a natural gas pipeline through the delta region of the San Joaquin Valley in Central California.

Land Development, Confidential Client, El Paso, Texas. (2002) Provided regulatory guidance for a proposed housing development being denied Section 401 certification because of significant impacts to arroyo systems in the Franklin Mountains in El Paso, Texas. Conducted meetings with State agencies and coordinated with design engineers on project modifications to minimize project impacts. Negotiated compensatory mitigation for unavoidable impacts.

Land Development, Conoco Phillips, Contra Costa County, California. (2006) Assessed biological resources on a 470 acre property proposed for development near the city of Rodeo, California. Produced Biological Resources Assessment report and Biological Constraints Analysis to determine project viability based on the presence of listed species and sensitive habitats.

Land Development, Presidio in the Pines, Coconino County, Arizona. (2005) Assessed biological resources on a 250 acre property proposed for development near the city of Flagstaff, Arizona. Provided regulatory guidance for development including informal consultation with the USFWS on potential for impacts to Mexican spotted owl.

Land Development, Private Land Owner, Riverside County, California. (2004) Assessed biological resources on a 5-acre property for which the land owner was requesting a grading

permit for a single family home. Conducted habitat assessment in support of CEQA clearance for development. Consulted Western Riverside MSHCP for impacts and mitigation requirements in the appropriate conservation area.

San Timoteo Landfill Expansion, San Bernardino County, California. (2005) Assessed biological resources at the San Timoteo Landfill for expansion of access routs through undisturbed areas. Roads were to be cut to allow heavy equipment into areas to conduct geological studies for a proposed expansion of the landfill. Assessed habitat for San Bernardino kangaroo rat, coastal California gnatcatcher, and Nevin's barberry. Guided routs through non-native grasslands to minimize impact to native habitats.

Power Plant Expansion Project, Black Hills Power, Kern County, California. (2005) Assessed biological resources on a 60-acre property proposed for development of 200-Mega Watt power generating facility. Assessed habitat for blunt-nosed leopard lizard, giant kangaroo rat, San Joaquin antelope squirrel, Tipton kangaroo rat, and San Joaquin kit fox. Applied habitat assessment information to biological section of a CEQA document.

Land Development, La Quinta Family Apartments, L.P., Riverside County, California. (2003) Assessed biological resources on an 11-acre plot of land intended for residential development in La Quinta, California. Performed preliminary habitat assessment and assessed potential for impact to sensitive species on aeolean sand dune habitat comm on to the Coachella Valley. Coordinated impact assessment and mitigation strategies with the Coachella Valley MSHCP, the City Planning Department, and resource agencies.

Street Widening Project, City of Stockton, San Joaquin County, California. (2004) Assessed biological resources along Pershing Avenue in a heavily urbanized area of Stockton, California. Street widening project involved removal of vegetation in planter strips and the replacement of a bridge over Smith Canal. Report used in support of CEQA documentation.

Land Development, Lancar Development Inc., Placer County, California. (2004) Assessed biological resources on a 48-acre plot of land intended for residential development near Loomis, California. Performed preliminary habitat assessment, assessed potential for impact to sensitive species and determined jurisdictional status of waters found on the property.

Decommissioning Saw Mill Facility, Georgia Pacific, Mendocino County, California. (2004-2005) Assessed biological resources on a 500-acre saw mill facility along the coast near Fort Bragg, California. Performed preliminary habitat assessment, assessed potential for impact to sensitive species, determined jurisdictional status of industrial ponds, and delineated jurisdictional waters on the facility. Provided regulatory support for obtaining permits from CDFG, USACE, and CCC.

Tank Farm Expansion, KMEP, Fresno County, California. (2005) Assessed biological resources in the vicinity of a petroleum storage facility near Fresno, California. Produced Biological Resources Assessment report and Biological Section of a CEQA document for project approval for the construction of an 80,000 barrel diesel storage tank.

Railroad Maintenance, BNSF, Contra Costa County, California. (2003) Assessed biological resources in the vicinity of a 1,600 foot railroad bridge near the city of Martinez. Examined potential impacts to sensitive species and habitats that may result from conducting general maintenance on the bridge. Provided recommendations for limiting the potential for significant impact. Performed pre-construction investigations for sensitive species including nesting migratory birds.

Pipeline Maintenance, KMEP, Arizona. (2003) Conducted investigation of biological resources within the right-of-way on sections of a pipeline through southern Arizona due to proposed vegetation clearing activities. Areas inspected pass through Yuma, Pinal, Maricopa, and Cochise Counties. Performed preliminary habitat assessment and assessed potential for impact to state and federally listed species. Provided recommendations for limiting the potential for significant impact.

Railroad Relocation, BNSF, Merced and Madera Counties, California. (2003) Assessed biological resources in the vicinity of public railroad crossings proposed for closure. Submitted

PEA documents to the CPUC for project approval. Applied for SAAs and consulted with agency personnel on project design and impact limitations.

Natural Gas Processing Plant Development, Hanover Company, Madison County, Texas. (2002) Assessed natural resource issues for siting a natural gas processing plant near Madisonville, TX. Performed preliminary habitat assessment, assessed potential for state and federally listed species, and delineated jurisdictional waters of the U.S. proposed to act as receiving waters for stormwater discharge. Provided recommendations for limiting the potential for significant impact.

Power Plant Expansion, Plant Black Hills Power, Humboldt County, California. (2006) Delineated jurisdictional waters including coastal wetlands using USACE, and Cowardin methods employed by the CCC and the CDFG. The delineation was conducted using sub-meter Global Positioning System (GPS) equipment and used in constraints mapping for the expansion of an existing power generating facility in Humboldt County, California. Provided regulatory support related to project restrictions for obtaining USACE, RWQCB, CDFG, and CCC permits.

Transmission Line Maintenance, San Diego Gas and Electric, San Diego County, California. (2004-2005) Delineated jurisdictional waters that were impacted by new road construction resulting from electrical grid maintenance operations during the November wildfires of 2003. Impacts to jurisdictional waters were delineated using sub-meter GPS equipment and mapped using GIS analysis.

Wetland Treatment Systems, Irvine Regional Water District (IRWD), Irvine, California. (2004) Provided technical assistance for IRWD project to design a series of constructed wetlands through a stormwater drainage system to treat effluent prior to reaching the Pacific Ocean. Wetlands were designed to maximize treatability while maintaining a healthy, native ecosystem to provide habitat for plants and wildlife including endangered species.

Railroad Track Expansion, BNSF, Brazos County, Texas. (2002) Delineated jurisdictional waters of the U.S. including wetlands adjacent to railroad tracks near Allenfarm, TX for proposed expansion project. Provided recommendations on Section 404 permitting including minimization measures to apply nationwide permit rather than individual permits. Also conducted a preliminary habitat assessment, and assessed potential for state and federal listed threatened and endangered species.

Power Plant Development, Sithe Energies Inc., Lake County, Illinois. (2001) Delineated jurisdictional waters on 19-acre property near Lake Michigan for siting an 860 MW gas fired power plant near Waukegan, Illinois. Property was adjacent to a state park with confirmed endangered and threatened species and "high quality" wetlands. Coordinated Section 404 permitting through the USACE-Chicago District and the Lake County Stormwater Management Council. Coordinated surveys for threatened and endangered species through the USFWS and the Illinois Department of Natural Resources.

Railway Expansion, BNSF, Bell County, Texas. (2001) Delineated wetlands proposed expansion of railroad track system in Temple, Texas. Delineated wetlands and waters of the U.S. and assessed potential for state and federal listed threatened and endangered species for project that included the filling and rerouting of approximately 4.5 acres of stormwater drainage ditch containing wetland vegetation. Provided recommendations on Section 404 permitting requirements and suggested mitigation measures to minimize potential impacts.

Wetland Creation, ENTRIX Inc., Corpus Christi, Texas. (1998) Augmented natural wetland conditions as part of wetland mitigation project on wind tidal flat area in Corpus Christi Bay, Texas. Project was designed to populate wind tidal flats with indigenous halophytic plant species by creating artificial hummocks to provide elevation from tidal influence, thereby allowing for natural plant distribution.

Wetland Creation, ENTRIX Inc., Corpus Christi, Texas. (1998) Transplanted smooth cord grass (*Spartina alterniflora*) to dredge spoil islands as part of a wetland mitigation project in Corpus Christi Bay. Constructed devices designed to protect transplanted species from natural forces such as wind and wave action.

Water Treatment Plant Development, City of Austin, Austin, Texas. (2000) Assisted with focused surveys for the state and federally endangered golden-cheeked warbler (*Dendroica chrysoparia*). Included a preliminary presence/absence determination and subsequent territorial assessments using USFWS approved methodology. Survey included habitat assessment of 60-acre property proposed by the City of Austin for development of a water treatment plant.

Presentations/Publications

Ricono, N.A. 1999. Seasonal water quality impacts of riverine and coastal waters on the coral reefs of Veracruz, Mexico. Master Thesis. Department of Biology, Texas A&M University-Corpus Christi. Corpus Christi, Texas.

Carmen Caceres-Schnell, P.G.
Geology and Soils

Education

M.S., Geology, California State University, Northridge

B.S., Geology, California State University, Northridge

Years of Experience

With AECOM: 4
With other firms: 8

Professional Registrations and Affiliations

Professional Geologist/2007/CA, Registration No: 8405

Ms. Caceres-Schnell is a California Professional Geologist with 12 years of experience. She prides herself in providing the client with thorough analysis of subject matter and meeting project schedules. Ms. Caceres-Schnell's expertise is in geological hazard and earth sciences evaluations for power plants, including solar power, large chemical plants, and commercial/industrial facilities. Recently, she conducted the geologic, soils, and hydrogeologic resource studies for the three Solar Millennium solar thermal power plants in Southern California. As part of the work conducted for Solar Millennium, she coordinated with several parties to ensure that field studies were conducted safely, and according to work plans and permit requirements. In addition, Ms. Caceres-Schnell has extensive experience in the preparation of documents required by the Regional Water Quality Control Board (RWQCB).

She has also prepared the earth sciences sections and conducted hydrologic assessments for the Beacon Solar Energy Project, Victorville 2 and Palmdale Hybrid Power Project Application for Certifications (AFCs). Ms. Caceres-Schnell provided geologic and soils expertise for AECOM's California Environmental Quality Act (CEQA) Initial Studies for several peaker plant projects proposed by Southern California Edison in southern California.

Representative Project Experience

Solar Millennium; Applications for Certification of Three Solar Thermal Power Plants; Kern and Riverside Counties, California. Provided geologic, soils, and groundwater expertise for the AFC for the California Energy Commission (CEC) for three simultaneous solar power plant projects (two in Riverside County and one in Kern County). In addition, Ms Caceres-Schnell provided input to the geotechnical and soil erosion investigation program so that the appropriate level of scope was conducted and the necessary geotechnical were data collected for each project. She prepared the Geologic Hazards and Resources sections for the sites that included determining the likely impact of ground shaking, liquefaction, seismically induced landslides and slope failure of specific areas in southern California. She was also responsible for the evaluation of

soil, agricultural, and groundwater resources. As part of the groundwater resources, Ms. Caceres-Schnell was responsible for locating and interpreting available information on the respective groundwater basins, developing water balances for the basins, as well as coordinating the compilation of a comprehensive groundwater database for each project. Ms. Caceres-Schnell interfaced with regulatory agencies and local municipalities regarding laws, ordinances, regulations and standards that applied to the plant and identified key points of contact for permits needed. She also led the preparation of documents required by the RWQCB such as the Report of Waste Discharge (ROWD) documents and the Dredge and Fill permits for all three power plants. Included in the ROWDs was the preparation of Detection Monitoring Plans, Corrective Action plans, and Preliminary Closure Plans. Ms. Caceres-Schnell also provided support in the development of a Water Mitigation Plan to propose offsets for construction and operation water use at a power plant located in a basin that is already in overdraft. In addition, Ms. Caceres-Schnell was responsible for coordinating and preparing compliance reports and permits to meet the CEC license requirements for soil and water resources.

NextEra Energy Resources, Inc, Concentrated Solar Electric Generating Facility, Environmental Permitting, California. The proposed 2,000-acre site is sited on an Alquist-Priolo fault zone. Ms. Caceres-Schnell provided geologic and soils expertise for the AFC for the CEC. Due the active fault zone and collapsible soil conditions on site, Ms. Caceres-Schnell conducted a thorough evaluation of potential impacts to the project from ground shaking, liquefaction, seismically induced landslides, slope failure, and collapsible soils based on available regional and site specific information. In addition, Ms. Caceres-Schnell conducted hydrologic assessments of the groundwater basin and prepared the ROWD document for the on-site evaporation ponds and land treatment unit.

Edison Mission Energy, CEQA Initial Study, Imperial Valley, California. Ms. Caceres-Schnell provided geologic and soils expertise for the CEQA Initial Studies for two photovoltaic projects sites in 2009. She prepared the Geologic Hazards and Resources sections and evaluated soil, agricultural, and mineral resources for both sites.

Inland Energy, Victorville 2 and Palmdale Hybrid Power Project, Application for Certification, California. Provided geologic and soils expertise for the AFC process under the CEC for the Victorville 2 Hybrid gas-solar power plant project. Ms. Caceres-Schnell prepared the Geologic Hazards and Resources sections for the site that included determining the likely impact of ground shaking, liquefaction, seismically induced landslides and slope failure of specific areas in southern California. She was also responsible for the evaluation of soil, agricultural, and groundwater resources. Interfaced with regulatory agencies and local municipalities regarding laws, ordinances, regulations and standards that applied to the plant and identified key points of contact for permits needed.

For the Palmdale Hybrid Power Project, Ms. Caceres-Schnell prepared responses to the Soil and Water Resources data requests, and reviewed both the Preliminary and Final Staff Assessments. As part of the data response preparation, she provided information on the RWQCB requirements for dredge and fill/waste discharge requirements, reclamation water waiver requirements for use of secondary-treated water during construction, and the need for a ROWD for the management of heat transfer fluid.

Justin Westrum
Environmental Specialist

Education

MEM, Environmental Management, Yale University

BS, Environmental Biology, Columbia University

Years of Experience

With AECOM: 4
With other firms: 4

Technical Specialties

Baseline & Benchmark Field Studies

Coastal & Marine Studies

Environmental Impact Assessment & Statements

Federal, State, Province & Local Regulatory Interface & Negotiation

Impact Mitigation Planning Major Capital Projects Permitting

Natural Resources Management

Program Management for Project Permitting

Project Feasibility, Siting & Planning

Socioeconomic Assessment &

Mr. Westrum has over eight years of experience in the environmental field, including management of multidisciplinary impact assessments and permitting for a wide variety of projects for both private and public sector clients. His areas of expertise include project planning, impact assessment, permitting, and compliance support for large-scale infrastructure projects, particularly renewable energy facilities and coastal and marine projects. Although he is a biologist by training and is still often heavily involved with the biology-related aspects of his projects, Mr. Westrum is a generalist who is interested in providing a comprehensive range of services to his clients. He has contributed to project analyses on topics ranging from aesthetics to zoning and everything in-between. Mr. Westrum's project work has provided him with broad experience in navigating complex regulatory environments; interacting with clients and permitting agencies; conducting and coordinating fieldwork; preparing quality impact analysis and permitting documents; and providing clients with strategic consulting that saves time, effort, and money. Specific qualifications include:

- Strong background in siting, planning, permitting, and compliance for renewable energy facilities and a wide range of other large-scale infrastructure projects
- Solid knowledge of National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) processes and document preparation
- Experience managing complex projects and coordinating the work of people with different technical backgrounds and skill sets
- Strong writing, communication, organizational, quantitative, and computer skills

Experience

Energy Project Planning & Permitting

First Solar; Project Development Support for Desert Sunlight Solar Farm; Riverside County, California. Serving as project manager for a consulting team providing environmental assessment and permitting support to First Solar's Desert Sunlight Solar Farm

Stakeholder Management Support

Water Resources Management

Water Supply Permitting & Development

Training and Certifications

Red Cross First Aid and CPR
40 Hour Hazardous Waste Operations & Emergency Response Training

Environmental Due Diligence Training

Pipeline Capital Permitting Bootcamp

AEP CEQA Workshops - Basic and Advanced

Wetland Delineation Training

Capital Permitting Training
Smith Systems Drivers Training

project, a proposed 550-megawatt (MW) solar photovoltaic (PV) energy facility located on 4,000+ acres of land administered by the Bureau of Land Management (BLM) near Desert Center, California. Also supporting the development of the project's 12-mile long transmission line and Southern California Edison's Red Bluff Substation (interconnection point to the regional transmission grid). Tasks include serving as the primary author of the project's Plan of Development (POD) to the BLM; drafting, reviewing, and/or editing portions of the project's Environmental Impact Statement, Biological Assessment, public meeting materials, and various other permitting documents and resource management plans; and working as a seconded employee providing First Solar with in-house project development assistance. Responsibilities include coordinating work between First Solar's various teams (e.g., Permitting; Development; and Engineering, Procurement, and Construction) and various regulatory agencies (e.g., BLM, California Public Utilities Commission, U.S. Fish and Wildlife Service [USFWS], and California Fish and Game Department [CDFG]). Primary issues being addressed include land use, water use, drainage and erosion control, and the Project's potential impacts on biological and cultural resources.

Inland Energy, Application for Certification of Hybrid Solar-Gas Power Plant, Palmdale, California. Prepared the Geology, Soils, and Water Resources sections of the Application for Certification (AFC) to the California Energy Commission (CEC) for the Palmdale Hybrid Power Project. The project is a proposed 570-MW hybrid solar-thermal and natural gas combined-cycle power plant. Issues addressed included geological hazards (e.g., earthquake risk) and project impacts on water quality and availability, soil resources, and geological resources. Also addressed impacts from construction of the Project's 36-mile transmission line and 17 miles of pipelines (gas, water, and wastewater).

Solar Millennium; Environmental Compliance for the Blythe Solar Power Project; Eastern Riverside County, California. Serving as Environmental Compliance Coordinator for construction of the 1,000-MW Blythe Solar Power Project, which, when constructed, will be the largest solar facility in the world. Tasks include creating and maintaining a schedule and tracking matrix covering all the Conditions of Certification for the project and all activities and submittals necessary to comply with those Conditions during the six-year-long construction of the 7,000+ acre facility, 12-mile transmission line, and 10-mile gas pipeline; coordinating the work of the team of environmental specialists, engineers, and construction managers carrying out the compliance tasks for the project; writing, reviewing, and editing various environmental compliance plans and reports and coordinating their submittal to the CEC; and maintaining an archive of all of the Project's compliance documents.

Fotowatio Renewable Ventures (FRV); Planning and Permitting Support for Oro Verde Solar Project; Edwards Air Force Base, Kern County, California. Serving as deputy project manager for comprehensive environmental planning, permitting, and impact assessment for a proposed 450-MW solar PV project to be sited at

Edwards Air Force Base as part of the Air Force's Enhanced Use Lease Program. Coordinating work between the AECOM consulting team, the Air Force, and FRV. Conducting a Critical Issues Analysis and Preliminary Habitat Assessment for siting of the solar facility and associated transmission line. Analyzing critical issues and potential fatal flaws related to biological resources, cultural resources, water use, geological hazards, unexploded ordnance, construction air emissions, land use, environmental justice, and other topic areas. After the optimal siting for the project components is determined through the Critical Issues Analysis, will provide impact assessment services to fulfill the project's federal and state environmental review processes under the NEPA and CEQA. Also providing support in obtaining other required federal, state, and local approvals and permits for the project.

First Solar; Plan of Development for Desert Quartzite Solar Project; Eastern Riverside County, California. Served as project manager for updating the POD for a proposed 700-MW solar PV project to be located on BLM-administered land in eastern Riverside County, near Blythe, California. Primary siting and permitting concerns for the project include land use, biological resources, hydrology and drainage. Coordinated the work of a team of resource specialists, engineers, writers, and editors in producing the Plan, which will serve as the first step in launching the federal and state environmental review processes for the project.

Solar Millennium; Application for Certification for Ridgecrest Solar Power Project; Kern County, California. Provided impact assessment and permitting support for the 250-MW Ridgecrest Solar Power Project, proposed to be located on approximately 1,400 acres administered by the BLM. The primary environmental issues addressed include potential impacts to biological resources, land use, water use, and visual resources. Tasks include writing and/or editing portions of the Project's POD, AFC to the CEC, Data Adequacy and Data Discovery responses, and Biological Resources Technical Report, as well as an Environmental Assessment for geotechnical work at the Project site.

CalEnergy; Amendment Petition for Application for Certification of Geothermal Power Plant, Imperial County, California. Authored and/or edited multiple sections of the Amendment Petition for the AFC to the CEC for a 160-MW geothermal power plant. Prepared the Biological Resources section of the Application and provided significant contributions to additional Application topic areas including Land Use and Agricultural Resources, Soils, Waste Management, Worker Safety, Transmission Line Safety & Nuisance, Project Alternatives, and Cumulative Impacts Analysis. Coordinated biological field surveys and assisted in preparation of a Biological Technical Resources Report and coordination with the CDFG and USFWS regarding special status species issues.

Multiple Solar Industry Clients; Critical Issues Analyses and Due Diligence for Siting of Proposed Solar Power Facilities; Various Locations, California, Nevada, and Arizona. Conducted environmental due diligence and analyzed critical issues for the siting

of solar power facilities and associated transmission infrastructure at more than 50 potential sites in the American Southwest. Conducted screening level analyses of sites in order to determine the feasibility of permitting and constructing solar facilities on them. Typical tasks included constraints mapping, Phase I environmental due diligence, preparing Critical Issues Analyses and preliminary permitting plans, and conducting research on issues such as biological resources, water resources and hydrology, cultural resources, visual resources, recreational resources, land use, socioeconomics and environmental justice, geological hazards, soil resources, and noise. Conducted research for both PV and solar thermal facilities for clients such as Edison Mission Energy, Solar Reserve, and FRV.

PSEG; Power Plant Permitting Research for Renewable Energy Facilities; Various Locations, Eastern U.S. Researched permitting requirements for wind and biomass energy facilities in several Eastern states and prepared summary reports for the client. The research included gathering information on the siting process, Best Available Control Technology requirements, permitting processes and timeframes, state and federal incentive programs for renewable energy, and emissions trading programs.

Woodside Natural Gas; OceanWay Deep Water Port Lighting Plan; Santa Monica, California. Prepared a lighting assessment and mitigation plan for a proposed offshore facility for bringing Liquefied Natural Gas to Southern California. Tasks included: 1) Determining the project's overall lighting requirements. 2) Conducting light measurements in the field to quantify the magnitude of light from the OceanWay facility and comparing this to other offshore structures in Southern California. 3) Identifying potential impacts of project lighting on seabirds and other marine organisms. 4) Evaluating potential light minimization and mitigation measures. Preparation of the lighting plan included a three day offshore field trip to conduct lighting measurements. Also served as Safety Officer (both onshore and offshore) for the biological sampling program for the OceanWay project.

Bay Area Rapid Transit; Biological Resources Analysis for the Oakland Airport Connector Project; Oakland, California. Preparing a Biological Resources Update to the Environmental Impact Report (EIR) / Environmental Impact Statement (EIS) for a proposed rapid transit connector line to the Oakland International Airport. The report analyzes the potential for special-status species occurrences in the project area and provides a summary of technical studies that have been prepared since the EIR/EIS was released in 2002, including a burrowing owl habitat assessment and survey, a tree inventory, and a jurisdictional delineation of state and federal waters.

NiSource; Multi-Species Habitat Conservation Plan for Natural Gas Pipeline Network; Various Locations, Eastern U.S. Assisted with the species analysis component of a Multi-Species/Multi-State Habitat Conservation Plan (HCP) for Endangered Species Act coverage for activities related to maintenance and operation of NiSource's 17,000-mile interstate natural gas pipeline network.

Endangered Species Act coverage would be provided through a Section 10 HCP and Incidental Take Permit. The HCP addressed over 70 species of concern in 17 states. Tasks included preparation of a Conservation Framework, Impacts Analysis, and Avoidance and Minimization Measures for each species of concern.

California Department of Transportation and San Diego Association of Governments; EIR/EIS for Highway Improvement Projects; San Diego County, California. Prepared the Biological Resources sections of the EIR/EISs for two highway projects in northern San Diego County: the State Route 76, South Mission Road to Interstate-15, Highway Improvement Project and the Interstate 5/State Route 56 Interchange Improvement Project. Both are sited in locations that provide important riparian and upland habitat for multiple special status species, including the federally-listed San Diego ambrosia, arroyo toad, southwest willow flycatcher, least Bell's vireo, and coastal California gnatcatcher. Authored EIR/EIS sections addressing Natural Communities, Wetlands/Other Waters, Plant Species, Animal Species, Threatened and Endangered Species, and Invasive Species for both projects.

TransCanada; Bison Pipeline Surveys; Wyoming, Montana, and North Dakota. Served as GPS technician for pre-construction paleontological surveys for a proposed natural gas pipeline connecting the Powder River Basin of Wyoming to an existing pipeline in North Dakota. Performed daily management of GPS and paleontological data collected in the field. Responsible for delivering daily health and safety briefings to the field team and submitting daily reports on health and safety issues.

U.S. Army Corps of Engineers, Mobile District; NEPA Document Preparation for Army Base Realignment and Closure (BRAC) Sites; Various Locations. Participated in the production of NEPA documents for multiple BRAC sites, including research, document preparation and editing, and analysis of base reuse scenarios. Assisted in the preparation of NEPA documents for the following installations: Selfridge Army National Guard - Michigan (Sebille Manor), Chesterfield Township, Michigan; Fort McPherson, Atlanta, Georgia; Fort Gillem, Forest Park, Georgia; Riverbank Army Ammunition Plant, Riverbank, California; and Fort Monroe, Hampton, Virginia. Prepared or edited impact analyses addressing hazardous waste management and remediation, preservation of historic structures/cultural resources, land use compatibility, air quality/emissions, water quality and resources, biological resources (including threatened and endangered species), soil resources, transportation, utilities, and noise.

Multiple Clients; Phase I Environmental Site Assessments; Various Locations. Conducted environmental due diligence and site assessments for more than a dozen commercial and agricultural properties for a variety of clients. Conducted site visits, record reviews, interviews, regulatory and historical research, and report preparation.

SANDIS CIVIL ENGINEERS SURVEYORS PLANNERS

JOHN D. WILSON, PE, LEED AP

REGISTRATION:

Civil Engineer, State of California, License No. C 33695
Traffic Engineer, State of California, License No. TR 1192

CAPABILITIES:

Mr. Wilson is a civil and traffic engineer with over 30 years of experience in the areas of civil, traffic and transportation engineering. He has served in the capacity of principal in charge or project manager for a variety of traffic, and transportation related projects for both public and private clients. He has been responsible for all aspects of traffic studies including circulation analyses/ plans, impact analyses, the development and design of mitigation measures, and the generation of project reports. He has extensive experience preparing and presenting plans to neighborhood groups/ associations, public agencies, and elected bodies.

EXPERIENCE RECORD:

At Sandis, Mr. Wilson is responsible for all traffic and transportation related projects. Mr. Wilson has been responsible for the preparation of traffic and transportation analyses for a number of Applications for Certification of power plants throughout the State of California. He has provided both written and oral testimony to the CEC as part of the certification process. Analyses have been prepared for generation facilities proposed in the Southern California Desert, Central Valley, and Sacramento areas specifically at Blythe, California City, Palen, Parlier, Ridgecrest, the Salton Sea and Victorville. He has also completed numerous access and circulation studies for a variety of projects throughout the State of California allowing him to develop ongoing working relationships with a variety of agencies, local municipalities, and private developers. As a consultant to the San Francisco Transportation Authority, he has prepared traffic analyses for Strategic Analysis Reports (Technical Informational Reports to the Board of Supervisors) for the evaluation of Central Freeway Replacement Alternatives, demolition of a second portion of the Central Freeway, and for the evaluation of a one-couplet in the South of Market Area. He was recently responsible for a major series of traffic signal improvements for the Mission Bay Development in San Francisco which included interfacing with the Municipal Light Rail System, interconnection, and variable message signing in the vicinity of Pac Bell Park. He has completed traffic impact studies for U.S. Postal facilities throughout California and Washington which typically included presentations to local governing agencies and neighborhood groups. He has completed traffic impact studies for industrial or office developments in the Cities of Oakland, Vacaville, Stockton, Hayward, Santa Clara, and Palo Alto; commercial developments in the Cities of Oakland, Milpitas, San Jose, Morgan Hill, and Vacaville; and residential developments in the Cities of Novato, Pinole, Hayward, San Ramon, and Redwood City. Mr. Wilson has extensive experience working with Caltrans Staff having completed projects in almost all Districts. Projects involving Caltrans have ranged from traffic impact studies to the design of highway widening to design of access improvements and the installation of traffic signals.

EDUCATION:

M.S. Transportation Engineering, Cal Poly, San Luis Obispo, CA, 1974
B.S.C.E., University of Santa Clara, Santa Clara, CA, 1971

Gregory S. Wolffe, CPP
Public Health Lead

Education

BA, Environmental Science, UC Santa Barbara, 1987

BA, Physical Anthropology, UC Santa Barbara, 1987

AA, Zoology, Fullerton College, 1985

Years of Experience

With AECOM: 5
With other firms: 19

Technical Specialties

Air Quality Impact Analysis

Emissions Inventories

Air Dispersion Modeling

Emission Reductions Credits

Health Risk Assessment

Professional Affiliations

Science Applications International Corporation

McLaren/Hart Engineering

USDA Forest Service

As a Senior Program Manager with AECOM in Orange, California, Mr. Wolffe will be responsible for the project public health analysis. Mr. Wolffe has performed dozens of multi-pathway Health Risk Assessments (HRAs) in California for California Energy Commission (CEC) and local air quality management district's including the South Coast Air Quality Management District (SCAQMD), the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD), the Antelope Valley Air Quality Management District (AVAQMD), the Mojave Desert Air Quality Management District (MDAQMD), and the San Diego Air Pollution Control District. Mr. Wolffe performed as the technical lead for Public Health (PH) section of five recent applications to the CEC, such as an Application for Certification (AFC) for two 70-megawatt (MW) hybrid power plants proposed in the Victorville and Palmdale areas. Mr. Wolffe has worked with the SCAQMD on recent public health requirements for two projects in the South Coast Air Basin, which followed district guidelines for conducting HRA's under California's AB2588 program as well as California Environmental Quality Act (CEQA), including an evaluation of toxic air contaminant (TAC) emissions from stationary and portable sources. Also in the SCAQMD, Mr. Wolffe has performed HRA studies including one that addressed barge movements through inner and outer regions of the Port of Los Angeles, which required Hot Spots Analysis and Reporting (HARP) modeling of over 100 emission sources, 40 air toxic pollutants, and use of onsite meteorological data. He was the primary health risk assessment modeler for four major AB 2588 HRAs for the Navy at San Diego that required analysis and clustering of hundreds of active emission sources, and identification of receptors.

Experience

Inland Energy, Victorville 2 and Palmdale Hybrid Power Projects, California. Mr. Wolffe performed as the technical lead for the PH section of an AFC to the CEC for a 550-MW hybrid power plant proposed near Victorville. Mr. Wolffe conducted the PH analysis in accordance with CEC and the MDAQMD methods and thresholds.

NextEra Energy Resource Inc., Beacon Solar Energy Project, California City, California. Mr. Wolffe performed as the technical

lead for the PH section of an AFC to the CEC for the Beacon Solar Energy Project (BSEP), proposed in Kern County, California. The BSEP is designed to use parabolic trough solar thermal technology to produce a nominal electrical power output of 250 MW using a steam turbine generator fed from a solar steam generator.

Solar Millennium, Solar Energy Projects, Mojave Desert, California. Mr. Wolffe is currently the technical lead for the PH section of an AFC to the CEC for three Solar Millennium sites in California. The Solar projects are designed as a low environmental impact project that will use parabolic trough solar thermal technology to produce a nominal electrical power output using a steam turbine generator fed from a solar steam generator.

CEQA Health Risk Assessment for the Port of Los Angeles, California. In the SCAQMD, Mr. Wolffe has performed HRA studies including one that addressed barge movements through inner and outer regions of the Port of Los Angeles, which required HARP modeling of over 100 emission sources, 40 air toxic pollutants, and use of on-site meteorological data. He performed HRA of mobile sources through the analysis of barge movement through the inner and outer harbor regions for the Port of Los Angeles.

Wal-Mart Distribution Center, CEQA Air Quality Health Risk Assessment, Merced, California. Mr. Wolffe has worked with the SJVUAPCD on recent public health requirements for two projects in Manteca and Merced, which followed district guidelines for conducting HRA's under CEQA and included an evaluation of TAC emissions from stationary and mobile sources. Mr. Wolffe conducted a health risk assessment of long-term operation of a long-haul truck distribution center propose in the city of Merced.

Gregory Canyon Landfill Project, Air Quality Impact Analysis and HRA, San Diego, California. Mr. Wolffe was the lead air quality modeler for a proposed 33 million cubic feet landfill in San Diego. Air quality analysis includes a using HARP tool. The project used on-site meteorological data processed with regional upper air sounding data for more accurate dispersion modeling.

Ventura Regional Sanitation District (VRSD), Air Quality Impact Analysis and Health Risk Assessment, Toland Landfill Expansion, Ventura, California. Mr. Wolffe conducted air dispersion modeling and HRA in support of Environmental Impact Report required under the CEQA for Toland Road Landfill Biosolids System and Electric Generation Project. The proposed project includes the construction and operation of a biosolids drying system and landfill gas-fired electrical microturbine generators. The modeling was performed using the HARP model.

US Navy, Health Risk Assessment, California. Mr. Wolffe was the primary health risk assessment modeler for four major AB 2588 HRAs for the Navy at San Diego (addressing operations at the Marine Corps Air Ground Combat Center Twentynine Palms, Naval Air Station North Island, Naval Amphibious Base Coronado, and Point Loma Naval

Complex) that required analysis and clustering of hundreds of active emission sources, and identification of receptors.

Department of Energy, Atmospheric Fate & Transport Analysis Human Health Risk Assessment, Amarillo (Pantex), Texas and Hanford, Washington. Performed atmospheric pathway analysis to estimate radionuclide, air toxics, and criteria pollutant concentrations, and wet and dry deposition where applicable, for incorporation in the assessment of human health risks from waste vitrification and previously contaminated Department of Energy sites. Volatilization and wind-blown particulates emissions were calculated from area sources via the atmospheric pathway. Air dispersion modeling was used to determine source receptor relationships for pollutants based on the source release characteristics and physical classes of particulates and vapors. Toxic and criteria pollutant modeling was performed using the Industrial Source Complex Short Term air dispersion model. Modeled ground-level concentrations and deposition rates based on source-terms using soil data and vertical stratification schemes were multiplied by actual emissions to determine actual impacts.

INLAND ENERGY INC.

Roy Xu

Neng (Roy) Xu
Development Engineer

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Education

- M.C.M Construction Management; University of Southern California, Los Angeles, 2008
- B.S. Civil Engineering; University of Southern California, Los Angeles, 2007

Mr. Xu is a Summa-Cum Laude graduate from the University of Southern California and has been working as a Development Engineer for Inland Energy for two and half years. Mr. Xu is part of the management team that oversees the development effort to both the Victorville 2 Hybrid Power Project and the Palmdale Hybrid Power Project. Responsibilities and works performed include:

Victorville Hybrid Power Project (VV2)

- Assisted the City of Victorville in obtaining PM10 credits for the project through road paving;
- Successfully applied for CEC Renewable Portfolio Standards (RPS) pre-certification and developed methods of calculating solar energy generation from a hybrid plant;
- Coordinated project team to satisfy each CEC pre-construction compliance condition;
- Reviewed grid interconnection studies and negotiated interconnection agreements with SCE;
- Updated project financial model;
- Compiled procurement instructions for project acquisition, reviewed incoming bids.

Palmdale Hybrid Power Project (PHPP)

- Assisted project team in assembling permitting documentations and data request responses;
- Drafted Emission Reduction Credits Term Sheet and negotiated the final Purchase and Sale Option Agreement with Seller;
- Worked with engineering consultant on site plan and civil work for the project;
- Involved in grid interconnection planning and reviewed Interconnection Studies

APPENDIX C
APPLICANT'S TENTATIVE EXHIBIT AND DECLARATION LIST

APPLICANT'S TENTATIVE EXHIBIT AND DECLARATION LIST

CITY OF PALMDALE HYBRID POWER PLANT

Docket No. 08-AFC-9

(as of 2/09/11)

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
1.	47383	8/04/08	AFC Section 1.0 – Executive Summary	Various	Tom Barnett, Inland Energy Sara Head, AECOM	9
2.	47383	8/04/08	AFC Section 2.0 – Project Description	Project Description	Tom Barnett, Inland Energy Sara Head, AECOM	69
3.	47383	8/04/08	AFC Section 3.0 – Closure	Various	Arrie Bachrach, AECOM	3
4.	47383	8/04/08	AFC Section 4.0 – Project Alternatives	Alternatives	Tom Barnett, Inland Energy Sara Head, AECOM Dave Larsen, Navigant	19
5.	47383	8/04/08	AFC Section 5.1 – General Environmental	Land Use	Elizabeth Copley, AECOM	4
6.	47383	8/04/08	AFC Section 5.2 – Air Quality	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	89
7.	47383	8/04/08	AFC Section 5.3 – Biological Resources	Biological Resources	Matt Amalong, AMEC	67
8.	47383	8/04/08	AFC Section 5.4 – Cultural Resources	Cultural Resources	Jim Allan, WSA	45
9.	47383	8/04/08	AFC Section 5.5 – Geologic Hazards and Resources	Geology and Paleontology	Justin Westrum, AECOM	19
10.	47383	8/04/08	AFC Section 5.6 – Hazardous Material Handling	Hazardous Materials	Russ Kingsley, AECOM	33
11.	47383	8/04/08	AFC Section 5.7 – Land Use	Land Use	Arrie Bachrach, AECOM	40
12.	47383	8/04/08	AFC Section 5.8 – Noise	Noise and Vibration	Sara Head, AECOM	23
13.	47383	8/04/08	AFC Section 5.9 – Paleontological Resources	Geology and Paleontology	Cara Corsetti, SWCA	19
14.	47383	8/04/08	AFC Section 5.10 – Public Health	Public Health	Greg Wolffe, AECOM	33
15.	47383	8/04/08	AFC Section 5.11 – Socioeconomics	Socioeconomic Resources	Elizabeth Copley, AECOM	40
16.	47383	8/04/08	AFC Section 5.12 – Soils	Soil and Water Resources	Justin Westrum, AECOM	31
17.	47383	8/04/08	AFC Section 5.13 – Traffic and Transportation	Traffic and Transportation	John Wilson, Sandis	30

CITY OF PALMDALE HYBRID POWER PLANT
Docket No. 08-AFC-9

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
18.	47383	8/04/08	AFC Section 5.14 – Transmission Line Safety and Nuisance	Transmission Line Safety and Nuisance	Dave Larsen, Navigant	16
19.	47383	8/04/08	AFC Section 5.15 – Visual Resources	Visual Resources	Merlyn Paulson, AECOM	44
20.	47383	8/04/08	AFC Section 5.16 – Waste Management	Waste Management	Mike Arvidson, AECOM	18
21.	47383	8/04/08	AFC Section 5.17 – Water Resources	Soil and Water Resources	Justin Westrum, AECOM	18
22.	47383	8/04/08	AFC Section 5.18 – Worker Safety	Worker Safety	Mike Arvidson, AECOM	23
23.	47383	8/04/08	AFC Appendix A – Surrounding Properties: Assessor's Parcel Nos./ Property Owners	Project Description	Arrie Bachrach, AECOM	54
24.	47383	8/04/08	AFC Appendix B – Preliminary Geotechnical Investigation Report (Kleinfelder)	Geology and Paleontology	Justin Westrum, AECOM	112
25.	47383	8/04/08	AFC Appendix C – Engineering Design Criteria	Facility Design	Arrie Bachrach, AECOM	81
26.	47383	8/04/08	AFC Appendix D – Therminol™ VP1 Heat Transfer Fluid: Material Safety Data Sheet	Hazardous Materials	Russ Kingsley, AECOM	10
27.	47383	8/04/08	AFC Appendix E – Agency and Other Correspondence (Appendix E.1 and E.2)	Soil and Water	Justin Westrum, AECOM	4
			AFC Appendix E – Agency and Other Correspondence (Appendix E.3)	Hazardous Materials	Russ Kingsley, AECOM	3
			AFC Appendix E – Agency and Other Correspondence (Appendix E.4 and E.5)	Traffic and Transportation	Tom Barnett, Inland Energy	6
28.	47383	8/04/08	AFC Appendix F – System Impact Study (Electrical Interconnection)	Transmission System Engineering	Tom Barnett, Inland Energy	208
29.	47383	8/04/08	AFC Appendix G – Air Quality Supporting Documentation	Air Quality	Russ Kingsley, AECOM	371
30.	47383	8/04/08	AFC Appendix H – Biological Resources Technical Report/ Biological Assessment	Biological Resources	Matt Amalong, AMEC Alice Karl Phil Leitner	567
31.	47383	8/04/08	AFC Appendix I – Cultural Resources Technical Report	Cultural Resources	Jim Allan, WSA	132
32.	47383	8/04/08	AFC Appendix J – Paleontological Resources Technical Report	Geology and Paleontology	Cara Corsetti, SWCA	68
33.	47383	8/04/08	AFC Appendix K – Phase I Environmental Site Assessment	Waste Management	Mike Arvidson, AECOM	442

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
34.	47383	8/04/08	AFC Appendix L – Drainage Erosion Sediment Control Plan	Soil and Water Resources	Justin Westrum, AECOM	411
35.	47384	7/30/08	Appendix G.6 - Air Quality and Public Health Modeling Files	Air Quality Public Health	Sara Head, AECOM Rich Hamel, AECOM	1 CD
36.	47753	8/21/08	Paleontological Resources Technical Report (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Geology and Paleontology	Cara Corsetti, SWCA	2
37.	48067	9/16/08	California Department of Parks and Recreation Form 523 for Primary 19-2730 showing the location of previous archaeological studies and previously recorded archaeological sites (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Cultural Resources	Jim Allan, WSA	8
38.	48245	9/26/08	Paleontological Resources Technical Report (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Geology and Paleontology	Cara Corsetti, SWCA	2
39.	48300	10/01/08	Applicant's Data Adequacy Supplement, Volume 3 (Project Overview and Transmission System Engineering)	Transmission System Engineering	Tom Barnett, Inland Energy	6
			Applicant's Data Adequacy Supplement, Volume 3 (Biological Resources)	Biological Resources	Matt Amalong, AMEC	187
	(48317)		Applicant's Data Adequacy Supplement, Volume 3 (Cultural Resources)	Cultural Resources	Jim Allan, WSA	670
			Applicant's Data Adequacy Supplement, Volume 3 (Socioeconomics)	Socioeconomics	Elizabeth Copley, AECOM	2
			Applicant's Data Adequacy Supplement, Volume 3 (Soils)	Soils	Justin Westrum, AECOM	4

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
			Applicant's Data Adequacy Supplement, Volume 3 (Traffic and Transportation)	Traffic and Transportation	John Wilson, Sandis	10
			Applicant's Data Adequacy Supplement, Volume 3 (Visual Resources)	Visual Resources	Merlyn Paulson, AECOM	7
			Applicant's Data Adequacy Supplement, Volume 3 (Soil and Water Resources)	Soil and Water Resources	Justin Westrum, AECOM	161
40.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
41.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
42.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
43.	49555	12/30/08	Objections to Certain Data Requests from the California Energy Commission Staff, Data Requests Set 1 (Nos. 22-25)	Cultural Resources	Jim Allan, WSA	2
			Objections to Certain Data Requests from the California Energy Commission Staff, Data Requests Set 1 (Nos. 86-87)	Waste Management	Mike Arvidson, AECOM	1
44.	49688	1/12/09	Applicant's Responses to CEC Data Request, Set 1 (Nos. 1-17)	Biological Resources	Matt Amalong, AMEC	22
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 18-25)	Cultural Resources	Jim Allan, WSA	18
			Applicant's Responses to CEC Data Request, Set 1 (No. 26)	Geology and Paleontology	Carmen Caceres-Schnell, AECOM	1
			Applicant's Responses to CEC Data Request, Set 1 (No. 27)	Hazardous Materials	Russ Kingsley, AECOM	12
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 28-49)	Land Use	Arrie Bachrach, AECOM	28
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 50-66)	Soil and Water Resources	Mike Flack, AECOM	46
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 67-72)	Socioeconomics	Elizabeth Copley, AECOM	4
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 73-79)	Transmission System Engineering	Dave Larson, Navigant	2
			Applicant's Responses to CEC Data Request, Set 1 (No. 80)	Visual Resources	Merlyn Paulson, AECOM	3
			Applicant's Responses to CEC Data Request, Set 1 (Nos. 81-87)	Waste Management	Mike Arvidson, AECOM	16
			Applicant's Responses to CEC Data Request, Set 1 (No. 88)	Worker Safety	Mike Arvidson, AECOM	2

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
45.	49750	1/15/09	Comments from LA County Public Works, re: Soils/ Geotechnical	Soil and Water Resources	Carmen Caceres-Schnell, AECOM	4
46.	50094	2/13/09	Applicant Supplemental Responses to CEC Data Request Set 1 (Transmission System Engineering)	Transmission System Engineering	Tom Barnett, Inland Energy	2
			Applicant Supplemental Responses to CEC Data Request Set 1 (Alternatives)	Alternatives	Arrie Bachrach, AECOM	2
			Applicant Supplemental Responses to CEC Data Request Set 1 (Air Quality)	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	2
			Applicant Supplemental Responses to CEC Data Request Set 1 (Biological Resources)	Biological Resources	Matt Amalong, AMEC	1
			Applicant Supplemental Responses to CEC Data Request Set 1 (Hazardous Materials Management)	Hazardous Material Management	Russ Kingsley, AECOM	4
			Applicant Supplemental Responses to CEC Data Request Set 1 (Traffic and Transportation)	Traffic and Transportation	John Wilson, Sandis	2
			Applicant Supplemental Responses to CEC Data Request Set 1 (Visual Resources)	Visual Resources	Merlyn Paulson, AECOM	1
			Applicant Supplemental Responses to CEC Data Request Set 1 (Waste Management)	Waste Management	Carl Lindner, AECOM	445
			Applicant Supplemental Responses to CEC Data Request Set 1 (Soil and Water Resources)	Soil and Water Resources	Mike Flack, AECOM	3
47.	50363	3/02/09	Responses to CEC Data Request Set 1 (Project Description)	Project Description	Sara Head, AECOM	9
			Responses to CEC Data Request Set 1 (Nos. 73-79)	Transmission System Engineering	Tom Barnett, AECOM	6
			Responses to CEC Data Request Set 1 (Alternatives)	Alternatives	Arrie Bachrach, AECOM	2
			Responses to CEC Data Request Set 1 (Nos. 4, 7 and 10)	Biological Resources	Matt Amalong, AMEC	4
			Responses to CEC Data Request Set 1 (Nos. 21-22)	Cultural Resources	Jim Allan, WSA	9
			Responses to CEC Data Request Set 1 (Nos. 28, 31, 39-49)	Land Use	Laurie Lile, City of Palmdale Sara Head, AECOM	46

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
48.	50368	2/25/09	Revised Attachment 7 Cultural Resources Technical Report, Palmdale Hybrid Power Project, Palmdale, California. (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Cultural Resources	Jim Allan, WSA	2
49.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
50.	50476	3/11/09	PHPP Socioeconomic Question	Socioeconomic Resources	Sara Head, AECOM	1
51.	50821	3/31/09	U.S. EPA Submittal – PSD Permit & Request for Endangered Species Act Consultation	Air Quality Biological Resources	Sara Head, AECOM Matt Amalong, AMEC Alice Karl	622
52.	50941	3/19/09	Applicant's Comments on Preliminary Determination of Compliance (PDOC)	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	4
53.	50961	4/09/09	Supplemental Response #3 to CEC Data Request Set 1	Biological Resources	Matt Amalong, AMEC Nick Ricono, AMEC	148
			Supplemental Response #3 to CEC Data Request Set 1	Cultural Resources	Jim Allan, WSA	27
			Supplemental Response #3 to CEC Data Request Set 1	Land Use	Laurie Lile, City of Palmdale	1
			Supplemental Response #3 to CEC Data Request Set 1	Waste Management	Carl Lindner, AECOM	349
			Response to CEC Data Request Set 2 (Nos, 147 and 155)	Visual Resources	Howard Balentine, AECOM	4 and 1 CD
54.	51012	4/01/09	Response to Data Request 20: Archaeological Survey of Two Realignments of the Electrical Transmission Line, Twenty-Two Pull Areas, and Three Laydown Areas, within the Palmdale Hybrid Power Project Area (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Cultural Resources	Jim Allan, WSA	2
55.	51746	3/19/09	U.S. EPA's Comments on the PDOC	Air Quality	Sara Head, AECOM	9

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
56.	51417	5/01/09	Applicant's Response to CEC Data Request Set 2 (Nos. 91-114)	Air Quality	Russ Kingsley, AECOM Rich Hamel, AECOM	323
			Applicant's Response to CEC Data Request Set 2 (Nos. 115-126)	Alternatives	Tom Barnett, Inland Energy	10
			Applicant's Response to CEC Data Request Set 2 (Nos. 127-136) and Supplemental Response #4 to Data Request, Set 1	Biological Resources	Sara Head, AECOM Matt Amalong, AMEC	26 and 134
			Applicant's Response to CEC Data Request Set 2 (No. 137)	Cultural Resources	Jim Allan, WSA	30
			Applicant's Response to CEC Data Request Set 2 (Nos. 91-114)	Land Use	Laurie Lile, City of Palmdale Sara Head, AECOM	21
			Applicant's Response to CEC Data Request Set 2 (Nos. 143, 157-162)	Traffic and Transportation	Roy Hauger, AECOM Howard Balentine, AECOM	111
			Applicant's Response to CEC Data Request Set 2 (Nos. 144-146)	Transmission System Engineering	Tom Barnett, Inland Energy	7
			Applicant's Response to CEC Data Request Set 2 (Nos. 147-155)	Visual Resources	Howard Balentine, AECOM	14
			Applicant's Response to CEC Data Request Set 2 (No. 156)	Waste Management	Carl Lindner, AECOM	2
57.	51524	5/11/09	CDFG Submittal - Revised application for incidental take of endangered species, threatened species, and candidate species	Biological Resources	Matt Amalong, AMEC	22
58.	51623	5/19/09	E-mail response from Applicant to Data Request 142 - detailed land use maps	Land Use	Sara Head, AECOM	7
59.	51592	5/15/09	Applicant's Response to CEC Data Request re Cultural Resources	Cultural Resources	Jim Allan, WSA	11
60.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
61.	51709	5/27/09	CDFG Comments on Applicant's Biological Resources Technical Report	Biological Resources	Matt Amalong, AMEC	106
62.	51773	6/02/09	Data Response 152 Corrections	Visual Resources	Howard Balentine, AECOM	8
63.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
64.	51782	6/02/09	Applicant's Revised Responses to CEC Data Requests 152 - 153	Visual Resources	Howard Balentine, AECOM	9

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
65.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
66.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
67.	53579	6/02/09	PHPP Inventory Report for Joshua Trees and California Junipers, City of Palmdale Native Desert Vegetation Ordinance	Biological Resources	Matt Amalong, AMEC	61
68.	52147	6/24/09	Applicant's Response to CEC Staff Request for Clarification on Data Request 137	Cultural Resources	Jim Allan, WSA	6
69.	52139	6/22/09	AVAQMD's Revised Preliminary Determination of Compliance	Air Quality	Russ Kingsley, AECOM	45
70.	52220	6/30/09	Applicant's Response to CEC Staff Status Report 4	Various	Sara Head, AECOM	25
71.	52185	6/29/09	SCE Letter in Response to CEC June 10th Request for Additional Information for Proposed Project	Transmission System Engineering	Tom Barnett, Inland Energy	4
72.	52305	7/06/09	AVAQMD's Comments on Staff Status Report No. 4	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	22
73.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
74.	52341	7/08/09	Applicant's Response to CDFG Comments on the Request for Incidental Take Permit for Mohave Ground Squirrel and Additional Comments	Biological Resources	Matt Amalong, AMEC Phil Leitner	62
75.	52445	7/16/09	Applicant's New Simulations of the PHPP Transmission Line	Visual Resources	Merlyn Paulson, AECOM	7
76.	52528	7/22/09	Supplemental Responses from July 9th Committee Conference (Air Quality)	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	5
			Supplemental Responses from July 9th Committee Conference (Biological Resources)	Biological Resources	Matt Amalong, AMEC Nick Ricono, AMEC Phil Leitner	26
			Supplemental Responses from July 9th Committee Conference (Transmission System Engineering)	Transmission System Engineering	Tom Barnett, Inland Energy	66
			Supplemental Responses from July 9th Committee Conference (Water Resources)	Soil and Water Resources	Roy Xu, Inland Energy	49

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
77.	52590	7/23/09	Map depicting potential compensation mitigation lands. The mitigation map is related to previously submitted materials associated with Applicant's Supplemental Responses to Data Request CC-B1, dated July 22, 2009. (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Biological Resources	Matt Amalong, AMEC Phil Leitner	3
78.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
79.	52654	7/31/09	Final Arroyo Toad Survey Report	Biological Resources	Matt Amalong, AMEC	49
80.	52693	7/31/09	Responses to Requests from the July 28th Phone Conference	Biological Resources	Nick Ricono, AMEC	77
81.	pending	8/04/09	DVD entitled, "Avoidance of Potentially Jurisdictional Waters" (not docketed by CEC)	Biological Resources	Nick Ricono, AMEC	1 DVD
82.	52790	8/07/09	Letter to U.S. EPA Transmitting an Addendum to the Biological Assessment	Biological Resources	Matt Amalong, AMEC	9
83.	52836	8/11/09	Revised Will Serve Letters	Soil and Water Resources	Sara Head, AECOM	9
84.	52902	8/18/09	Letter to the U.S. EPA in Response to U.S. EPA's Comments on the Revised PDOC	Air Quality	Russ Kingsley, AECOM	14
85.	52960	8/20/09	Revised map depicting potential compensation mitigation lands along with the locations of actual Mohave ground squirrel sitings since 1990 (first submitted to the CEC on July 23, 2009). (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Biological Resources	Matt Amalong, AMEC Phil Leitner	3
86.	53021	8/27/09	Final Swainson's Hawk Nesting Survey Report	Biological Resources	Matt Amalong, AMEC	52
87.	53028	8/27/09	Compilation of E-mail Responses to New Data Requests (Project Description)	Project Description	Sara Head, AECOM	16

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
			Compilation of E-mail Responses to New Data Requests (Land Use)	Land Use	Laurie Lile, City of Palmdale Sara Head, AECOM	44
88.	53215	9/10/09	CDFG Letter Regarding Streambed Alteration Agreement	Biological Resources	Nick Ricono, AMEC	4
89.	53316	9/22/09	Applicant's KOP-1 and KOP-2 Photos	Visual Resources	Merlyn Paulson, AECOM	10
90.	53366	9/10/09	Map depicting potential compensation mitigation lands (first submitted to the CEC on July 23, 2009 and subsequently submitted in revised form on August 20, 2009). (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the revised application for confidential designation of this document is included with Applicant's exhibits)	Biological Resources	Matt Amalong, AMEC Phil Leitner	2
91.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
92.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
93.	n/a	n/a	Intentionally omitted	n/a	n/a	n/a
94.	53825	10/21/09	ROC with Mike Mischel from City of Palmdale Public Works Department re Other Project Near Palmdale Site	Project Description	Laurie Lile, City of Palmdale Tom Barnett, Inland Energy	1
95.	53827	10/21/09	Map depicting potential compensation mitigation lands (first submitted to the CEC on July 23, 2009 and subsequently submitted in revised form on August 20, 2009). (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the revised application for confidential designation of this document is included with Applicant's exhibits)	Biological Resources	Matt Amalong, AMEC Phil Leitner	5
96.	54366	12/07/09	Letter from J. Kelly to J. Ledford Regarding Southern California Edison's(SCE) Position on Transmission Line Technical Feasibility	Transmission System Engineering	Tom Barnett, Inland Energy	8
97.	54709	1/06/10	Final Palmdale Facilities Study	Transmission System Engineering	Tom Barnett, Inland Energy	23

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
98.	55125	2/01/10	Submittal to U.S Army Corps of Engineers – Revised Preliminary Jurisdictional and Delineation of Waters of the U.S.	Biological Resources	Nick Ricono, AMEC	56
99.	55276	2/08/10	City of Palmdale's Comments on Volume 1 of the Preliminary Staff Assessment (PSA)	Various	Sara Head, AECOM	19
100.	55060	1/28/10	Federal Aviation Administration Letter of Determination of "No Hazard to Air Navigation"	Traffic and Transportation	Tom Barnett, Inland Energy	3
101.	55818	3/09/10	City of Palmdale's Comments on Volume 2 of the PHPP Preliminary Staff Assessment (Various)	Various	Sara Head, AECOM	8
			City of Palmdale's Comments on Volume 2 of the PHPP Preliminary Staff Assessment (Air Quality)	Air Quality	Russ Kingsley, AECOM	8
			City of Palmdale's Comments on Volume 2 of the PHPP Preliminary Staff Assessment (Biology)	Biological Resources	Matt Amalong, AMEC Alice Karl	39
102.	55995	3/20/10	City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (Various)	Various	Sara Head, AECOM	10
			City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (Cultural Resources)	Cultural Resources	Jim Allan, WSA	6
			City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (Land Use)	Land Use	Laurie Lile, City of Palmdale Sara Head, AECOM	6
			City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (SWPPP and Water Resources)	Soil and Water Resources	Roy Hauger, AECOM Roy Xu, Inland Energy	278
			City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (Traffic and Transportation)	Traffic and Transportation	John Wilson, Sandis Howard Balentine, AECOM	9
			City of Palmdale's Supplemental Comments on Volumes 1 & 2 of the PHPP PSA (Visual Resources)	Visual Resources	Merlyn Paulson	6
103.	56148	4/05/10	E-mail Correspondence Between Representatives of SCE & Inland Energy on Behalf of Applicant	Transmission System Engineering	Tom Barnett, Inland Energy	8

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
104.	56456	3/16/10	Figures for the Assessment of Potential PHPP Impacts to Five Additional Archaeological Sites (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Cultural Resources	Jim Allan, WSA	4
105.	56467	4/19/10	Confidential Term Sheet for Proposed Contingent Forward Purchase and Sale of San Joaquin Emission Reduction Credits by and between the City of Palmdale and Calpine Energy Services, L.P., dated March 8, 2010 (This exhibit has been deemed confidential and is on file with Melissa Jones, CEC Executive Director. Only the application for confidential designation of this document is included with Applicant's exhibits)	Air Quality	Tom Barnett, Inland Energy	17
106.	56649	5/12/10	City of Palmdale's Supplemental Information and Comments on PSA (Various)	Various	Sara Head, AECOM	5
			City of Palmdale's Supplemental Information and Comments on PSA (Air Quality)	Air Quality	Rich Hamel, AECOM	7
			City of Palmdale's Supplemental Information and Comments on PSA (Biological Resources)	Biological Resources	Matt Amalong, AMEC Nick Ricono, AMEC Alice Karl Phil Leitner	116
			City of Palmdale's Supplemental Information and Comments on PSA (Water Resources)	Soil and Water Resources	Laurie Lile, City of Palmdale Mike Flack, AECOM	7
107.	57732	7/23/10	Applicant's Submittal of Contract Information for ERC's to Offset NOx and VOC Emissions	Air Quality	Tom Barnett, Inland Energy Roy Xu, Inland Energy	54
108.	58013	8/11/10	Applicant's Special-Status Plants Pre-Construction Focused Survey Report	Biological Resources	Matt Amalong, AMEC	47
109.	58217	5/13/10	AVAQMD's Final Determination of Compliance	Air Quality	Russ Kingsley, AECOM	47
110.	58594	9/22/10	Applicant's Response to Staff Status Report No. 8 (Air Quality)	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	67

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
			Applicant's Response to Staff Status Report No. 8 (Alternatives)	Alternatives	Tom Barnett, Inland Energy	1
			Applicant's Response to Staff Status Report No. 8 (Traffic and Transportation)	Traffic and Transportation	Howard Balentine, AECOM	14
111.	58778	10/13/10	E-mail Report of Conversation Los Angeles County Sanitation District regarding Tertiary Treated Water Supplied to PHPP	Soil and Water Resources	Roy Xu, Inland Energy	5
112.	58903	10/28/10	Applicant's Comments to CEC Response to Additional Committee Questions Concerning Staff's Proposed Alternative T-Line Analysis (corrected version)	Alternatives	Tom Barnett, Inland Energy Dave Larsen, Navigant	13
113.	59341	12/15/10	Antelope Valley Air Quality Management District's Letter to Mr. Rios re Palmdale Emission Reduction Credits	Air Quality	Sara Head, AECOM Russ Kingsley, AECOM	5
114.	57079	6/09/10	PHPP, Email from USAF R. Cleaves to Mayor Ledford	Traffic and Transportation	Howard Balentine, AECOM	2
115.	57467	6/29/10	Antelope Valley AQMD Response to Staff's Comments on FDOC	Air Quality	Russ Kingsley, AECOM	7
116.	pending	1/12/11	Applicant's Response to Final Staff Assessment	Various	Sara Head, AECOM	40
117.	pending	1/12/11	Declaration of Jim Allan re Cultural Resources	Cultural Resources	Jim Allan, WSA	8
118.	pending	1/12/11	Declaration of Matt Amalong re Biological Resources	Biological Resources	Matt Amalong, AMEC	9
119.	pending	1/12/11	Declaration of Mike Arvidson re Waste Management, and Worker Safety	Waste Management, Worker Safety	Mike Arvidson, AECOM	5
120.	pending	1/12/11	Declaration of Arrie Bachrach re Project Description, Land Use, Facility Design, Alternatives, and Various	Project Description, Land Use, Facility Design, Alternatives, Various	Arrie Bachrach, AECOM	7
121.	pending	1/12/11	Declaration of Howard Balentine re Traffic and Transportation, and Visual Resources	Traffic and Transportation, Visual Resources	Howard Balentine, AECOM	10

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122.	pending	1/12/11	Declaration of Tom Barnett re Project Description, Air Quality, Traffic and Transportation, Transmission System Engineering, Alternatives, and Various	Project Description, Air Quality, Traffic and Transportation, Transmission System Engineering, Alternatives, Various	Tom Barnett, Inland Energy	5
123.	pending	1/12/11	Declaration of Elizabeth Copley re Land Use, and Socioeconomic Resources	Land Use, Socioeconomic Resources	Elizabeth Copley, AECOM	6
124.	pending	1/12/11	Declaration of Cara Corsetti re Geology and Paleontology	Geology and Paleontology	Cara Corsetti, SWCA	7
125.	pending	1/12/11	Declaration of Mike Flack re Soil & Water Resources	Soil & Water Resources	Mike Flack, AECOM	5
126.	pending	1/12/11	Declaration of Rich Hamel re Air Quality, and Public Health	Air Quality, Public Health	Rich Hamel, AECOM	6
127.	pending	1/12/11	Declaration of Roy Hauger re Soil & Water Resources, Traffic and Transportation	Soil & Water Resources, Traffic and Transportation	Roy Hauger, AECOM	4
128.	pending	1/12/11	Declaration of Sara Head re Project Description, Air Quality, Biological Resources, Land Use, Noise and Vibration, Socioeconomic Resources, Soil & Water Resources, Alternatives, and Various	Project Description, Air Quality, Biological Resources, Land Use, Noise and Vibration, Socioeconomic Resources, Soil & Water Resources, Alternatives, Various	Sara Head, AECOM	9
129.	pending	1/12/11	Declaration of Alice Karl re Biological Resources	Biological Resources	Alice Karl	16
130.	pending	1/12/11	Declaration of Russ Kingsley re Air Quality, and Hazardous Materials	Air Quality, Hazardous Materials	Russ Kingsley, AECOM	6
131.	pending	1/12/11	Declaration of Dave Larsen re Transmission Line Safety & Nuisance, Transmission System Engineering, and Alternatives	Transmission Line Safety & Nuisance, Transmission System Engineering, Alternatives	Dave Larsen, Navigant	7
132.	pending	1/12/11	Declaration of Phil Leitner re Biological Resources	Biological Resources	Phil Leitner	4

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Docket No. 08-AFC-9

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
133.	pending	1/12/11	Declaration of Laurie Lile re Project Description, Land Use, and Soil & Water Resources	Project Description, Land Use, Soil & Water Resources	Laurie Lile, City of Palmdale	3
134.	pending	1/12/11	Declaration of Carl Lindner re Waste Management	Waste Management	Carl Lindner, AECOM	5
135.	pending	1/12/11	Declaration of Merlyn Paulson re Visual Resources	Visual Resources	Merlyn Paulson, AECOM	7
136.	pending	1/12/11	Declaration of Nick Ricono re Biological Resources	Biological Resources	Nick Ricono, AMEC	12
137.	pending	1/12/11	Declaration of Carmen Caceres-Schnell re Soil & Water Resources, and Geology and Paleontology	Soil & Water Resources, Geology and Paleontology	Carmen Caceres-Schnell, AECOM	5
138.	pending	1/12/11	Declaration of Justin Westrum re Soil & Water Resources, and Geology and Paleontology	Soil & Water Resources, Geology and Paleontology	Justin Westrum, AECOM	8
139.	pending	1/12/11	Declaration of John Wilson re Traffic and Transportation	Traffic and Transportation	John Wilson, Sandis	3
140.	pending	1/12/11	Declaration of Greg Wolffe re Public Health	Public Health	Greg Wolffe, AECOM	5
141.	pending	1/12/11	Declaration of Roy Xu re Air Quality, and Soil & Water Resources	Air Quality, Soil & Water Resources	Roy Xu, Inland Energy	3
142.	pending	1/19/11	Rebuttal Testimony of Laurie Lile re Alternatives	Alternatives	Laurie Lile, City of Palmdale	5
143.	pending	7/21/10	Applicant's letter to U.S. EPA regarding Supplemental Information for the Application for PSD Permit, dated July 21, 2010 (with enclosure)	Air Quality	Sara Head, AECOM	87
144.	pending	1/26/11	Applicant's Rebuttal to "Opening Testimony and Rebuttal to Applicant's Response to Final Staff Assessment by Center for Biological Diversity"	Air Quality	Sara Head, AECOM	5
145.	pending	2/09/11	Supplemental Declaration of Sara Head to Sponsor New Exhibits	Air Quality	Sara Head, AECOM	2

APPENDIX D
SUPPLEMENTAL DECLARATION OF SARA HEAD REGARDING ADDITIONAL EXHIBITS (APPLICANT'S EXHIBIT 145)

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Energy Resources

Conservation and Development Commission

In the Matter of: APPLICATION FOR CERTIFICATION FOR THE PALMDALE HYBRID POWER PLANT BY THE CITY OF PALMDALE	Docket No. 08-AFC-9 SUPPLEMENTAL DECLARATION OF SARA HEAD TO SPONSOR NEW EXHIBITS

I, SARA J. HEAD, declare as follows:

1. I am an employee of AECOM and am duly authorized to make this declaration. Except where stated on information and belief, the facts set forth herein are true of my own personal knowledge and the opinions set forth herein are true and correct articulations of my opinions regarding the Palmdale Hybrid Power Plant ("PHPP" or "Project") on behalf of the City of Palmdale ("City" or "Applicant"). If called as a witness I could and would testify competently to the opinions set forth herein.

2. I earned a B.S. in Atmospheric Sciences from the University of California at Davis. I am a Vice President of AECOM and have managed environmental and air permitting projects for many facilities across the western U.S., including solar, combined-cycle, and coal-fired power generation. A copy of my current curriculum vitae which demonstrates my relevant experience and expertise is included as an attachment to the Applicant's testimony in this matter.

3. I am familiar with Exhibit 143, dated July 21, 2010, regarding Applicant's letter to U.S. EPA regarding Supplemental Information for the Application for PSD Permit (with enclosures), and Exhibit 144, dated January 26, 2011, regarding Applicant's Rebuttal to

"Opening Testimony and Rebuttal to Applicant's Response to Final Staff Assessment by Center for Biological Diversity."

4. The content of the above-referenced exhibits is true and accurate to the best of my information and belief.

5. I hereby offer the above-referenced exhibits into evidence.

Executed on January 27, 2011, at the location: Camarillo, California.

I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

SARA J. HEAD

STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:	)	Docket No. 08-AFC-9
	)	
Application for Certification,	)	**PROOF OF SERVICE**
for the CITY OF PALMDALE HYBRID	)	
POWER PLANT PROJECT	)	(Revised January 14, 2011)
	)	
	)	

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DECLARATION OF SERVICE

I, Paul Kihm, declare that on February 9, 2011, I served and filed copies of the attached document to all parties identified on the Proof of Service List above in the following manner:

APPLICANT'S PREHEARING CONFERENCE STATEMENT

California Energy Commission

☒ Transmission via electronic mail and by depositing a copy with FedEx overnight mail delivery service at Costa Mesa, California, with delivery fees thereon fully prepaid and addressed to the following:

CALIFORNIA ENERGY COMMISSION
Attn: DOCKET NO. 08-AFC-09
1516 Ninth Street, MS-4
Sacramento, California 95814-5512
docket@energy.state.ca.us

For Service to All Other Parties

☒ Transmission via electronic mail to all email addresses on the Proof of Service list; and

☒ by depositing one paper copy with the United States Postal Service via first-class mail at Costa Mesa, California, with postage fees thereon fully prepaid and addressed as provided on the Proof of Service list to those addresses **NOT** marked "email preferred."

I further declare that transmission via electronic mail and U.S. Mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 9, 2011, at Costa Mesa, California.

Paul Kihm